Work Safety Culture of Youth Farmworkers in North Carolina: A Pilot Study

Authors: T. Arcury, G. Kearney, G. Rodriguez, J. Arcury, & S. Quandt

Farmworker youth experience a high occupational injury rate in the fields in the U.S. They are most vulnerable to occupational injuries due to physical attributes (i.e., strength, size and surface-to-volume ratio), reproductive and neurological development, and lack of maturity and experience. Occupational injuries can be prevented by work safety culture. Work safety culture encompasses behavioral elements (observable safety and risk behaviors), situational elements (safety management programs and actions), and psychological elements (subjective assessments of safety). Yet work safety culture for youth working in the fields is understudied. Using data from a pilot study in North Carolina on farmworker youth, the investigation seeks to describe the behavioral, situational, and psychological components of the work safety culture of farmworker youth.

In collaboration with Wake Forest School of Medicine, East Carolina University, and the Farmworker Advocacy Network, 87 individual interviews – in English or in Spanish- were conducted with farmworker youth working in North Carolina. The sample includes both male (54, 62.1%) and female (33, 37.9%) farmworkers from ages 10 to 17 (10-13: 23, 26.4%; 14-15: 34, 39.1%; & 16-17: 30, 34.5%). From April 2013 to November 2013, individuals were recruited through snowball sampling through recommendations of various community organizations who know farmworker youth and families. Farmworker youth who participated in this study worked in a variety of crops. Most participants (74.7%) were attending school and 87.3% lived with one or both parents. Seventy-eight percent were born in the United States, most spoke English (78.2%) and Spanish (83.9%), and 89.7% identified as Latino.

In the roughly 45-minute interview, respondents were asked demographic questions, such as age, country of birth, ethnicity, educational attainment, state of residence, and whether they lived with a parent. Researchers also measured musculoskeletal injuries, trauma, and dermatological injuries experienced by the respondent in the past 12 months. Behavioral elements of worker safety culture were measured by four general safety behaviors: riding in uncovered trucks, seatbelt use, motorcycle helmet use, and all-terrain vehicle helmet use; and three work safety behaviors: safety goggle use, hearing protection use, and respirator use. Situational elements measured were training about pesticides, tool use and
machinery, and experiencing any form of sexual harassment. The safety attitude risk index, precarious employment scale, and perceived work safety climate scale were all used to measure psychological elements.

The study found that the behavioral elements, situational elements, and psychological elements point to unfavorable work safety culture. Measures for behavioral elements noted mixed general safety behavior but unsafe work behavior. More than half of farmworker youth expressed the general safety behaviors of wearing a seatbelt and not riding in the back of a truck. These safety behaviors were not apparent in work safety behavior. Very few wore safety goggles (8%) and, if applicable, used hearing protection (1 out of 54) and respirators (1 out of 34). More than half had experienced a musculoskeletal injury (54%), trauma (60.9%), and/or a dermatological injury (72.4%). Situational elements further indicated an unfavorable work safety culture. Many farmworker youth did not receive any training. Only 5% received pesticide training in the last 12 months. A small number of respondents experienced some form of sexual harassment: only 10% reported inappropriate sexual remarks, 4.6% reported inappropriate touching or grabbing, and 3.4% reported being asked for a sexual favor. None of the respondents reported being forced to have intimate physical contact.

Indicators of psychological measures demonstrated mixed safety attitudes that may show an unfavorable work safety culture. Twenty-three percent of farmworker youth believed that there is a chance he or she will be injured in the next 12 months. Forty-eight percent agreed that serious occupational injuries are inevitable. Further, 82% agreed that the pressure to work faster leads to work carelessness, yet they acknowledged that safety precautions are more important than work pace. Respondents expressed a sense of precarious employment; 41.4% felt that they could be easily replaced and 34.5% were afraid of being wrongfully fired.

Perceptions on work safety culture had some non-alarming components. The majority reported having control over personal safety (75.9%), and agreed that workers’ safety practices are very important to management (70.1%). However, less than half agreed with statements regarding the availability of proper safety equipment (32.2%) and the receipt of instructions on safety when hired (40.2%).

Overall, the collected data reveals an unfavorable work safety culture for farmworker youth. When compared to Latino high school students in California who work in agriculture and adult farmworkers, farmworker youth in North Carolina experienced notable differences. North Carolina farmworker youth have lower levels of safety behaviors and work safety behaviors than the California Latino youth. Even when compared with farmworker adults in California, North Carolina youth perceived a less safe work climate as demonstrated in the measures for psychological elements. Moreover, the researchers expressed concern about the unfavorable work safety culture demonstrated by the relatively low number of respondents that reported receiving pesticide safety training – although required by the EPA Worker Protection Standard – and suspected that some incidents of sexual harassment were unreported.

The researchers acknowledge the study’s limitations and make several recommendations. The small sample size of the study does not allow them to find
a statistically significant association between work safety culture and injuries. Additionally, the sample included boys and girls, so it was not able to recognize potential gender effects. Finally, the sample was prone to the variable effects of location and time because it was nonrandom and respondents were from a single state (North Carolina) over an extended period of time. Therefore, the authors recommend additional research to find variable effects. Further, they advocate for additional regulations to protect farmworker youth and question the appropriateness of agricultural work for youth.

“Where They (Live, Work and) Spray”: Pesticide Exposure, Childhood Asthma and Environmental Justice among Mexican-American Farmworkers

Authors: N. Schwartz, C. Glasco, V. Torres, L. Ramos, & C. Soria-Delgado

According to the California Health Interview Survey, Mexican-American children (ages 1 to 17) in the San Joaquin Valley have a higher prevalence rate of asthma (16.4%) than the national average (11.6%). Many studies speculate that this disparity is due to high childhood exposure to pesticides. However, very little research has investigated asthma in rural communities, specifically for Mexican-American children of farmworkers in California. Using a community-based participatory research method, the researchers examine childhood asthma and pesticide exposure among the farmworker community in the San Joaquin Valley.

Researchers chose the San Joaquin Valley as the setting for their study because it has one of the largest farmworker populations in the U.S. and is the wealthiest agricultural region in the world. It also has the worst air quality in the nation, a high poverty level, and significantly high rates of childhood asthma. The study is part of a larger multi-state investigation. Researchers were part of a bi-national team from Mexico and the United States who worked with local, bilingual research assistants who are the children of Mexican farmworkers. In this ethnographic study, researchers collected data through interviews, field notes, and the photovoice process. Interview participants were found using snowball sampling of community members through informal meetings and walking around the community.

The photovoice methodology was used to engage the farmworker community in the research. Photovoice trains participants in basic camera use so that they can document the places or things that relate to, cause, and or alleviate breathing problems or asthma. These photographs are then presented and discussed with other photovoice participants. Five pairs of children and their mothers participated in the process. Photovoice participants were self-identified Mexican-American or of Mexican-origin; members of the medically-underserved farmworker community; parents, grandparents, or guardians of a child with asthma or breathing problems; and children from ages 8 to 17 diagnosed with asthma or residing in a county with high prevalence of asthma.

Participants identified four key factors that contributed to children’s exposure to pesticide and respiratory health: (1) residential proximity to pesticide spraying, (2) school boundaries, (3) lack of environmentally-friendly play places, and (4)
improper containment of pesticides. Many interviewees noticed an increase in
asthma among children; “When I was not living in this area, my sons did not have
asthma.” One mother suggested that night spraying might be a root cause of the
high asthma prevalence. She said, “I am scared at night. When the sun rises all the
people are sick with running noses and pasty eyes and a lot cough due to the
smell.” However, many do not have the means to address this issue. One mother
said, “I only know that the owner of the fields buys all of this to put on the grapes
and it affects the air my children breathe.” Researchers also observed that many of
the schools are surrounded by cotton, almonds, and other crops. One participant
stated that “sometimes they have sprayed chemicals while the children are there.”
Respondents mentioned some progress; pesticides are no longer sprayed when
school is in session. Some community members have advocated for more changes
by voicing their concerns. One of these community members, Matilda, has lived in
the U.S. for many years, and has become more familiar with its political structure
than newer residents who often express that their voices are not heard and that
they are not politically represented.

Respondents also attributed the lack of environmentally-friendly places as a factor
contributing to poor respiratory health. The photovoice process allowed
respondents to document areas of play or fitness that are sprayed with pesticides,
for example a citrus orchard that is used for jogging. In one interview, Rogelio, a
Mexican immigrant farmworker, shared that some children are often exposed by
playing in the fields and eating unwashed fruit while their farmworker parents
worked on the weekends. The photovoice process also revealed that children were
exposed to pesticides due to improper storage practices. Photos included pesticide
storage tanks in front of family homes, an open pit with pesticide deposits, and
pesticide residues on the ground.

The researchers addressed policy concerns that participants voiced during
interviews and through the photovoice process. Several farmworkers asked the
researchers to share their findings with policymakers. They were uncomfortable
talking to political leaders themselves, but were aware of the long lasting effects of
pesticide exposure. Many wanted policymakers to hear that children have nowhere
to play and therefore are exposed to all types of pesticides. The researchers
suggest that adult farmworkers are undervalued, vulnerable, and understudied; one
parent stated that “nobody talked to us” about pesticides and their children’s
health. They believe that “their children would have been healthier had they
remained in Mexico.”

The researchers recommend creating a community advisory board that represents
isolated, rural counties in the San Joaquin Valley in order to better voice concerns
to policymakers. Another product of this research is a community-based
participatory pilot project that allows students to conduct their own research in
their community. Researchers acknowledge that further work is needed to fulfill
the purpose of their study – to present farmworker voices to those who can make a
difference. Such work needs to include social scientists to study cultural contents,
social inequalities, and power structures in pesticide exposure and environmental
justice. Additionally, social scientists need to work in concert with biomedical and
public health researchers to design viable community-based participatory projects
in order to share results with the community and policymakers.
Diabetes and cardiovascular disease (CVD) are growing health issues for Latino migrant farmworkers. Latinos are 66% most likely to be at risk for diabetes than non-Hispanic, White Americans. Mexican-Americans with diabetes are at twofold risk of cardiovascular death and threefold risk of death from coronary artery diseases compared to non-Hispanic Whites. These rates have increased with U.S. acculturation. In the U.S. farmworker community, there are about three million Latino migrant farmworkers that are at risk for health complications related to diabetes or CVD. Migrant health centers must implement innovative techniques to prevent rates from climbing as the Latino farmworker population increases and acculturates. However, there is very little research on cost effective methods to provide health screening, disease prevention education, and primary care to Latino migrant farmworker communities. The authors explore whether Latino community health workers (CHWs) can use non-invasive diabetes and CVD screening tools through their pilot study conducted in rural Virginia.

Risk scoring tools exist to allow those who are unable to see a clinician to identify themselves at high risk of diabetes and CVD. Risk scoring tools are critical for farmworkers who often do not have access to medical care. Such diabetes risk screening tools incorporate the American Diabetes Association’s simple eight question survey, a non-laboratory tool which is publicly available on its website. The diabetes screening tool scores the respondent from a range of one to ten, five or higher being at high risk. A CVD risk screening tool is based on standard risk factors, which include age, blood pressure, smoking status, body mass index (BMI), diabetes status, and hypertension. This pilot study provided CHWs with these risk screening tools to determine whether CHWs identify risk of development of diabetes and CVD amongst Latino migrant farmworkers with the same accuracy as registered nurses (RN), and also whether the farmworkers who are identified as moderate or high risk for diabetes or CVD seek health care.

The pilot study was conducted in ten migrant labor camps in rural Nelson County, Virginia. Housing circumstances varied in conditions and the camps consisted of 5 to 35 men. Screenings were conducted from July 2012 to September 2012 after work hours, usually in the evenings. Sixty-six farmworkers were screened by a total of eight CHWs and three RNs. The farmworker participants were recruited using flyers. These participants must have migrated to the area for work within the last six months, been male, been between the ages of 19 to 64 years old, their country of origin must have been a Latin American country, been able to understand and give verbal consent in English or Spanish, and had access to a telephone for a follow-up call two weeks after the screening. The criteria for a CHW to participate were ability to read and speak Spanish, identify as Latino/a, ability to obtain blood pressure reading using an automatic cuff, and ability to attend a one-time training on diabetes and CVD. CHWs were recruited by referrals from the Rural Health Outreach Program. Participating RNs were only required to be currently licensed in Virginia. An interpreter was often used for RNs to
communicate with farmworker participants.

One to two CHWs and one RN attended each farmworker screening session. Each RN and CHW was given a blood pressure cuff, a digital scale, a measuring tape, a calculator, and a BMI chart. However, the RN and the CHW received different screening packets. The CHW completed a screening packet that included a demographic information sheet, the diabetes risk-screening tool, the CVD risk screening, and an education and referral check sheet. All results were sealed immediately following each screening. The RN completed his/her screening tool packet, which included a physical data sheet, a BMI chart, the diabetes risk screening tool, the CVD risk screening tool, and a referral recommendation sheet. The researcher collected all the sealed envelopes and reviewed them after each screening session to identify any farmworkers who received a diabetes risk score of 5 or more and/or a CVD risk score of more than 10%. The RN scores were considered the gold standard in this study. The CHWs were advised to notify any participants who were at risk in order to refer them to care and provide them educational materials after each screening session. These at-risk farmworkers then received a follow up call two weeks after the screenings.

The study found that CHWs screen Latino migrant farmworkers with similar accuracy as RNs by using the diabetes and CVD screening tools. Results were statistically analyzed for percentages, means, and standard deviations. The mean difference between diabetes risk scores of the CHWs and RNs were not significantly different. The RN and the CHW gave 28 (42.2%) farmworkers the same diabetes risk scores while the rest (38, 57.6%) were given slightly but not significantly different scores. After statistical tests, the CHWs and RNs had similar CVD mean risk scores with minor discrepancies. The CHWs scored 4 farmworkers at low risk (less than 10%), 6 farmworkers at moderate risk (10% to 20%), and 4 farmworker at high risk (more than 30%). These numbers are similar to the RNs’; 14 farmworkers were identified as low risk, 4 farmworkers as moderate risk, and 6 farmworkers as high risk. Both the RNs and the CHWs recommended that 10 farmworkers seek health care and receive educational materials. In total, the CHWs initially referred 27.3% of all farmworkers to seek health care whereas the RNs referred 33.3% of all farmworkers. There were a total of 21 farmworker referrals. Only 8 (38.1%) farmworkers who received referrals scheduled and attended health care visits. All farmworkers attended appointments in mobile clinics. Four (19%) did not make their appointments. The rest (9, 42.9%) were not reachable via phone two weeks after the screening sessions.

The findings suggest that CHWs can play an innovative role in reducing the number of Latino migrant farmworkers who develop diabetes or CVD. CHWs can independently visit farm labor camps to identify those at risk of diabetes or CVD with the proper screening tools. The researchers acknowledge that their findings are limited in generalizability due to the study’s small, nonrandomized sample. They recommend further research that includes respondents from various non-Mexican Latin American countries with a larger sample size with farmworkers from different migrant streams and states. They also recommend a longitudinal, experimental design encompassing two migrant seasons that are 9 to 12 months apart. These changes would allow for future studies to be generalizable to all farmworker populations, as well as different ethnic groups and occupations.
Job Characteristics and Work Safety Climate Among North Carolina Farmworkers with H-2A Visas

Source: Journal of Agromedicine (2015) 20: 64-76

To participate in the H-2A program, an employer must agree to offer certain wages and working conditions to the foreign and domestic workers, including certain transportation expenses, decent housing, and workers’ compensation insurance. The principal purpose of these minimum standards is to avoid “adverse effects” on the employment opportunities, wages, and working conditions of U.S. farmworkers caused by the hiring of temporary foreign workers. Despite these protections, H-2A workers fear reporting any hazardous working conditions because their employers sponsor their visas. As a result, very little is known about the work safety climate among H-2A workers. Previous studies on the issue report a perception of poor work safety climate among farmworkers and farmworker youth. In this study, researchers explore the work safety climate of H-2A workers in North Carolina, the state that employs the largest number of H-2A workers. Specifically, this study seeks to describe North Carolina’s H-2A workers’ personal and job characteristics, job hazards, and stressors, their perceived work safety climate, and any associations of perceived work safety climate with job characteristics, job hazards, and stressors.

The project uses data from the PACE4 project, a community-based participatory research project that was collected in July 2012 through collaboration with the North Carolina Farmworkers Project. The PACE4 project collected data on cognitive and neurological outcomes of pesticides exposure. Participants of the PACE4 project were limited to men ages 30 to 70 years old, self-identified as Latino, spoke Spanish, and worked in agriculture for at least 3 years. These participants resided in labor camps in the surrounding counties of Benson (Harnett County, Johnston County, and Sampson County), the home of NC Farmworkers Project. NC Farmworkers Project recruited and screened the 235 volunteer participants in May 2012. 171 participants completed a follow-up interview in July 2012. This study uses data of the 163 participants that had H-2A visas and completed a follow-up interview.

Two types of questionnaires were administered during the interviews. A base line questionnaire measured personal characteristics, specifically age, marital status, education level, country of birth, and dominant language. A Contact 2 questionnaire measured job characteristics, job hazards, stressors, and perceived work safety climate. Job characteristics included type of work schedule, type of compensation and benefits, and job control. Respondent’s job task was also recorded, which included planting or cultivating, topping tobacco, and harvesting or packing. Job hazards included any form of pesticide exposure, use of personal protective equipment, and poor pesticide safety behaviors. Stressors were evaluated using a 17-item self-report instrument that scored items such as perceived discrimination, poor working conditions, etc. on a 5-point scale then all items were totaled to fall in a total score range of 0 to 68. The Perceived Safety Climate Scale was also used and consists of 9 items answered using a Likert scale, and one item with three response categories. Statistical tests were then run to assess bivariate associations between participants’ perceived work safety climate
and job characteristics, job hazards, and stress.

Descriptive statistics showed that 36% of all respondents were ages 30 to 44, 37% were ages 35 to 44, and 26% were 45 or older. A majority was married (96%) and had less than 12 years of education (93%). All respondents were from Mexico and their dominant language was Spanish. Most respondents worked more than 40 hours (59.5%) a week, started before 7 am (59.5%), and all but three were paid by the hour. Few of the respondents had any health insurance (18.4%) or paid sick leave (6.8%). Thirty-five percent of respondents were concerned about their work safety, 7.4% felt defenseless, and 11% felt discriminated against.

H-2A workers were exposed to various work hazards. Fifty-seven percent reported working near fields where pesticides were being applied and 64% reported working in an area where pesticides were applied within the last seven days. Although workers exhibited good routine safe behavior, such as wearing personal protective equipment like gloves (75.7%) and rain suits (73%), most worked in wet clothing (62.3%) and wet shoes (53.3%). The most common stressors were related to separation from their family, particularly worrying about their children’s education (86%). However, none agreed with the work-related stressors that were measured in the 17-item scale. The average score for the stressor instrument was 16 (SD: 6.3), meaning, on average, workers felt little stress. This low result of stress is surprising because other studies show that the stressor of separation from family affects perceptions of work safety.

The average score of the Perceived Safety Climate scale was favorable. A great majority agreed that work safety is very important for management (86%) and that they had personal control of their safety (79%). The only significant indicator of poor perceived work safety is that 69% agreed with the possibility of being injured at work in the next 12 months. The total mean score was 25.5 (SD: 3.7 points) out of a 10 to 39 range, with higher values indicating better work safety climate.

A few significant associations with perceived work safety climate were found. The number of hours one worked was related to perceived work safety climate. The mean score of those working fewer than 35 hours per week was 24.7 (SD= 3.6), while those working more than 48 hours per week scored a mean of 26.7 (SD=3.8). The mean score was lower among those who reported one or more precarious employment characteristic (24.39; SD=3.49) compared to those who did not (26.3; SD=3.6). Respondents who were planting or cultivating had a lower perceived work safety climate (24.28; SD= 3.8) than those who were not (26.1; SD=3.3); those who were topping had a higher perceived work safety climate (26; SD=3.3) than those who were not (24; SD = 3.9). Three days prior to the interview, about 70% of respondents topped tobacco, 36% planted and cultivated, and 44% harvested or packed. Those with a stress score of 10 or less had better perceived work safety climate (26.8; SD=4) than those with stress scores of 11 to 19 (25.6; SD = 3.5) or 20 or more (24.5; SD=3.5).

The researchers identify several limitations to their study. First, because the data collection occurred in July, before the peak of the tobacco harvest in August when farmworkers often work 7 days per week, the data is likely skewed. The time of year of the data collection could also explain the low numbers for wage theft and injuries caused by piece rate work. Further, since the data is cross-sectional, causality cannot be determined. The generalizability of the findings was further
limited because the sample was from a single state in one year that intentionally excluded younger farmworkers. The study also did not extensively collect work characteristics. Finally, the researchers also recognize that the study does not address issues of control and intimidation by employers.

Because the National Agricultural Workers Survey excludes H-2A workers from the data sample, this study provided unprecedented data on H-2A workers that allowed the researchers to formulate policy recommendations. Researchers advocate for improving H-2A workers’ contact with their families. They recommend providing internet access in migrant labor camps or, more robustly, allowing workers to bring family members with them. Another policy recommendation is to improve safety training provided to H-2A workers to reinforce safety and sanitation protocols, even when their employers are perceived to provide a safe work environment. Lastly, the researchers call for the reinforcement of current work safety regulations as well as a process to evaluate the effectiveness of these regulations.

**POLICY UPDATE: CHANGES TO FEDERAL DATA COLLECTION ON AGRICULTURAL WORKERS**

The National Institute for Occupational Safety and Health (NIOSH) and the U.S. Department of Labor (DOL) both announced proposed changes to its data collection on agricultural workers.

NIOSH announced it will reexamine its options for the collection of agricultural injury surveillance data. NIOSH will end its interagency agreement with the U.S. Department of Agriculture (USDA) and the U.S. Department of Labor (DOL) to collect data on agricultural injuries. As a result, NIOSH will stop conducting surveys of growers, discontinue the Occupational Injury Surveillance of Production Agriculture (OISPA) survey and the Childhood Agricultural Injury Survey (CAIS), and no longer provide funding for injury modules for the DOL’s National Agricultural Workers Survey (NAWS).

DOL announced that it proposes to add, delete, and modify questions to the NAWS questionnaire and is accepting public comment on these changes. The NAWS is a comprehensive employment-based survey of migrant and seasonal agricultural workers in the U.S. The NAWS provides demographic, employment, and health information on agricultural workers. Proposed new survey questions would collect information about agricultural workers’ housing, participation in education and training programs, access to and use of digital information devices, and utilization of acute, preventative, and dental health care.

Both the NIOSH injury surveillance data and the NAWS provide valuable information to researchers and clinicians on the health and safety of agricultural workers. FJ analyzed recent NAWS data and summarized its findings on demographics and health in easy-to-read fact sheets that are accessible on our website. FJ will monitor the future direction of NIOSH’s surveillance of agricultural
injuries and the collection of demographic and health data in the NAWS. More information about NIOSH’s data collection can be found [here](#). The announcement about changes to the NAWS can be found [here](#). For more information, contact Virginia Ruiz at vruiz@farmworkerjustice.org.