

FARMWORKER JUSTICE

HEALTH POLICY BULLETIN

Policy in Action to Support the Health and Wellbeing of Child Farmworkers

www.farmworkerjustice.org

Winter 2023

Policy Update: Overview of Federal and State Laws that Impact the Wellbeing of Child Farmworkers

By Heide Hernandez-Jimenez, Legal Fellow, Farmworker Justice

The Fair Labor Standards Act (FLSA) is the primary federal law that establishes the standards for employing children. Although FLSA generally prohibits the employment of children under the age of sixteen,¹ there are broad exceptions for children working in agriculture. Notably, federal labor laws do not limit how many hours child farmworkers can legally work outside of school hours.² Children under the age of twelve can be employed in agriculture if the child is employed outside of school hours, in a non-hazardous occupation, and the farm is either owned by a parent or is working on a farm and the child has the parent's written consent. There are waivers available for the short-term employment of ten- and eleven-year-old children to hand harvest piece-rate crops.³ People affected by violations of FLSA and its child labor provisions do not have a private right of action.⁴ This means that the Department of Labor is the main enforcement entity for compliance with child labor laws, at the federal level. The federal Environmental Protection Agency, which regulates pesticide safety through its Worker Protection Standard, requires that pesticide handlers and workers entering areas recently treated with pesticides be at least 18 years old.

On March 31, 2022, the Children's Act for Responsible Employment and Farm Safety of 2022 was introduced in the House of Representatives.⁵ This legislation sought to amend FLSA by raising the minimum age at which children can work in agriculture to fourteen unless they are employed by their own parents.⁶ It would also have repealed the ability for sixteen- to eighteen-year-old children to get a waiver from the U.S. Secretary of Labor to work in a hazardous occupation, as determined and defined by the Department of Labor.⁷ Additionally, it would have raised the financial penalties for child labor violations and added a criminal liability component for repeat offenders.⁸ Finally, it would have required the reporting of child deaths, injuries and illness.⁹

(Continued on page 2)

¹ 29 USC 212.

² Child Labor Bulletin 102, *Child Labor Requirements in Agricultural Occupations Under the Fair Labor Standards Act*, U.S. Department of Labor, Wage and Hour Division (Nov. 2016), <https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/childlabor102.pdf>.

³ 29 USC 213(c)(4).

⁴ 29 USC 212(b), 216(e) and 217; see generally *Breitwieser v. KMS Industries, Inc.*, 467 F.2d 1391, 1393 (5th Cir. 1972).

⁵ *The Children's Act for Responsible Employment and Farm Safety of 2022 H.R. 7345*, 117th Cong. (2022).

⁶ *Id.*

⁷ *Id.*

⁸ *Id.*

⁹ *Id.*

What's inside:

- 1-2: Policy Update
- 3-5: Guest article: Farmworker Children's Perils
- 6-11: Eye on Farmworker Health

Connect with us:

Online

www.farmworkerjustice.org



[Facebook.com/
FarmworkerJustice](https://www.facebook.com/FarmworkerJustice)



[Twitter.com/
FarmwrkrJustice](https://twitter.com/FarmwrkrJustice)



[Instagram.com/
farmworkerjustice](https://www.instagram.com/farmworkerjustice)

HRSA Disclaimer: This publication was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services as part of an award totaling \$550,000 with 0% financed by non-governmental sources. The contents are those of the authors and do not necessarily represent the official views of, nor an endorsement by, HRSA, HHS, or the U.S. Government.

(Continued from page 1)

At the state level, approximately fourteen states, Washington, D.C., and Puerto Rico have raised the minimum age at which a child can work in agriculture to fourteen years old.¹⁰ Twenty-five states and Washington, D.C. do not have a limit on the amount of hours per day a child under the age of sixteen can work in the fields.¹¹ Recently, state legislators in Iowa, Ohio, and Minnesota have introduced legislation to amend child labor laws to allow younger children to work in dangerous jobs, exempt employers from civil liability from negligence, deny child workers workers' compensation benefits, and expand the number of hours children can work.¹²

Government Programs that Impact Child Farmworker Health and Nutrition

Migratory and seasonal farmworkers experience high rates of poverty and food insecurity. Food insecurity and hunger have lasting and serious effects on children's health.¹³ The federal government sponsors several programs associated with nutrition health that impact farmworker children.

The main public assistance program that supports the health and wellbeing of farmworker children is the Supplemental Nutrition Assistance Program (SNAP). SNAP is an entitlement program that provides food assistance to qualifying low-income people.¹⁴ The ability to participate in SNAP is limited by citizenship status at the federal level. Only U.S. citizens and certain lawfully present non-citizens are eligible to receive SNAP benefits.¹⁵ Additional eligibility requirements for SNAP benefits vary by state.¹⁶ Children of non-qualifying parents may be eligible for SNAP. According to the 2020 National Agricultural Workers Survey, 13% of farmworker households received SNAP benefits.¹⁷

Initially established in 1946, the National School Lunch Program is a federal meal program that operates in schools and child care institutions.¹⁸ Its goal is to provide nutritionally balanced, low cost or free lunch to children during school. The Summer Food Service Program (SFSP) is a federal program that is administered by the states. It reimburses the state organizations that serve free meals and snacks to children in low-income communities. This program provides food during the summer for children.¹⁹

Approximately 90% of children enrolled in Migrant and Seasonal Head Start are insured either through Medicaid or the Children's Health Insurance Program (CHIP).²⁰ Medicaid provides free or low-cost health coverage for low-income individuals, including pregnant women and children. Some non-citizens may qualify for Medicaid; eligibility requirements vary by state. The CHIP program provides low-cost health coverage for children of families who earn too much to qualify for Medicaid. Each state program has its own CHIP eligibility rules. ■

¹⁰ *Lawyers for Good Government and Child Labor Coalition, Child Farmworkers: Too Young, Vulnerable, and Unprotected*, October 2021, <https://www.lawyersforgoodgovernment.org/child-farmworker-report>.

¹¹ *Id.*

¹² *Sainato, Michael. 'It's just crazy': Republicans attack US child labor laws as violations rise. The Guardian*, February 11, 2023. <https://www.theguardian.com/us-news/2023/feb/11/us-child-labor-laws-violations>.

¹³ *Essential and In Crisis, A Review of the Public Health Threats Facing Farmworkers in the US*, Johns Hopkins Center for a Livable Future (May 2021), <https://cf.ljhsph.edu/sites/default/files/2021-05/essential-and-in-crisis-a-review-of-the-public-health-threats-facing-farmworkers-in-the-us.pdf>.

¹⁴ *Supplemental Nutrition Assistance Program Guidance on Non-Citizen Eligibility*, U.S. Department of Agriculture, Food and Nutrition Service (June 30, 2011), <https://www.fns.usda.gov/snap/eligibility/non-citizen-eligibility>.

¹⁵ *SNAP Policy on Non-Citizen Eligibility*, U.S. Department of Agriculture, Food and Nutrition Service (Sept. 4, 2013), <https://www.fns.usda.gov/snap/eligibility/citizen/non-citizen-policy>.

¹⁶ *Id.*

¹⁷ *US Department of Labor, Findings from the National Agricultural Workers Survey 2019-2020: A Demographic and Employment Profile of United States Farmworkers*, Research Report No. 16, January 2022, <https://www.dol.gov/sites/dolgov/files/ETA/news/pdfs/NAWS%20Research%20Report%2016.pdf>.

¹⁸ *National School Lunch Program*, US Department of Agriculture, Food and Nutrition Service, <https://www.fns.usda.gov/nslp>.

¹⁹ *Summer Food Service Program*, US Department of Agriculture, Food and Nutrition Service, <https://www.fns.usda.gov/sfsp/summer-food-service-program>.

²⁰ *Migrant farmworkers in the U.S. need a medical safety net*, *Degrees* (Nov. 2022), <https://degrees.fhi360.org/2022/11/migrant-farmworkers-u-s-need-medical-safety-net/>.

Farmworker Children's Perils

By Melanie Forti, Children in the Fields Campaign Director & Health & Safety Programs Director,
Association of Farmworker Opportunity Programs

Due to exemptions in the Fair Labor Standards Act (FLSA), children in agriculture do not have the same protections as minors working in non-agricultural industries. To this day, child labor is still practiced in the fields of the United States. Children are allowed to work in hazardous, backbreaking conditions to support themselves and their families. Through continuous exposure to hazardous chemicals, this work interferes with their development, education, and health. It could potentially limit their opportunities and possibly create a vicious cycle of poverty and exploitation.

There is not an accurate count of how many children and youth work in agriculture. However, a 2006 survey by the National Agricultural Statistics Service (NASS) found that there were 307,000 youth under the age of 20 who were employed in the agricultural industry.²¹ The Association of Farmworker Opportunity Programs (AFOP) and many other advocacy groups have gathered data and estimate the number close to 500,000. Although no study has been conducted on the number of children working in agriculture under the age of 12, AFOP has conducted multiple visits to farms and have observed infants, toddlers and children as young as five working alongside their parents in the field.

"Nobody knows everything that is suffered while working in the fields. Like after crouching for the day, crawling on the ground, the excruciating back pain. Or when the sun hits its highest point, at 2-3 in the afternoon, and you die of thirst and exhaustion, wondering where to get the energy to keep going. While in the shade, drinking water and resting, the owner is yelling at everyone to hurry or they will not get to eat." - Karina, winner of CIFIC's Art & Essay Contest



Photo: David Bacon

Pesticide exposure, sharp tools, heavy equipment, extreme heat exposure, ergonomics, school drop-outs, acute and chronic health problems, financial burden, and psychological issues are just a few of the challenges farmworker children and their families face every day. Unfortunately, in a report released in November 2018 by the federal Government Accountability Office (GAO), researchers found that between 2003 and 2016, 237 children died while working on farms in the U.S.²²

"Being part of a farmworker family is somehow learning to hustle the struggle but never realizing it because your struggle is actually your normal, a normal that is not normal for everyone else." - Emily, winner of CIFIC's Art & Essay Contest

On a daily basis farmworker children face many challenges. While many are able to overcome these challenges, the majority just accept them as part of their daily "normal" living struggles. Below is a summary of just a few issues farmworker children face, as described in AFOP's Children in the Fields Campaign (CIFIC) publications:²³

(Continued on page 4)

²¹ National Institute for Occupational Safety and Health. Childhood Agricultural Injury Prevention Initiative: Childhood Agricultural Injury Survey (CAIS) Results. <https://www.cdc.gov/niosh/topics/childdaag/cais/default.html>.

²² Government Accountability Office. Working Children: Federal Injury Data and Compliance Strategies Could Be Strengthened. <https://www.gao.gov/products/gao-19-26>.

²³ Children In the Fields: The Stories You Should Know (2019) <http://afop.org/wp-content/uploads/2019/04/AFOP-CIFIC-Publication-The-Stories-You-Should-Know-2019.pdf>.

(Continued from page 3)

1. **Pesticide exposure:** Children are not miniature adults. Their reproductive, neurologic, and immune systems are still developing, and certain exposures may impair growth. Early exposure to neurotoxic pesticides, for example, can have lasting effects on the brain development of children. Pound for pound, kids breathe more, drink more, and eat more than adults, so when exposed to pesticides, they take in more. Children’s bodies metabolize, detoxify and eliminate substances differently than adult bodies.

2. **Extreme heat exposure:** In the case of exposure to extreme temperatures, children are also more vulnerable. Their unique physiology makes children more susceptible to temperature extremes and their health effects. Children are more prone to dehydration and heat illness than adults. According to Current Sports Medicine Reports, they have “a greater surface area to body mass ratio, lower rate of sweating, and slower rate of acclimatization.”²⁴ Most children haven’t yet developed an awareness of their body’s functions, and are thus less likely to recognize thirst or other signs of heat stress that are accumulating in their bodies.

The Children in the Fields Campaign conducted a survey with over 50 farmworker children from different states. When asked what they like least about working in the fields, migrant and seasonal farmworker (MSFW) children told us that temperature extremes ranked at the top of their list. Fortunately, 97% said they drink water regularly, and 68% said they do take breaks from the sun. However, 30% of them said they are able to take breaks from the sun only “sometimes,” and not everyone felt encouraged by their employer to take shaded breaks. Considering what is at stake, it is crucial that employers are fully supportive of regular, shaded breaks, and that they provide ample drinking water at all times in the fields.²⁵

3. **Financial burden/pressure:** The financial pressures of low-paid agricultural work are so great that they are felt by the entire family. Farmworker children report “choosing” to start work alongside their parents when they are as young as five or six years old. But, before we criticize or applaud that choice, we must first consider the paucity of options that are being presented to them. Children know without even being told that they could either live in crushing poverty, or contribute their time and energy to help support their families. So – naturally – they often “choose” the latter.



Photo: David Bacon

4. **Ergonomics:** We must understand two concepts: 1) agricultural work is hard physical work, and 2) children’s bodies are developing. When combined, the results can be tragic.

Farmworker children are at increased risk of suffering from ergonomic problems like back pain, arthritis, scoliosis, and other conditions, because of the nature of what agricultural work requires. Some of the activities that can cause farmworker children long-term suffering include: bending and kneeling all day; carrying, dragging and, pushing heavy buckets, sacks, or objects; using dull, rusty tools; prolonged standing; and prolonged work in high temperatures. Because their bodies are still developing, severe ergonomic health problems can shorten their life spans.

5. **Education & school dropout:** School can be particularly challenging for the children of migrant farmworkers. The school year can be disrupted by multiple moves across the country as the families follow the harvest seasons for work. Some children are pulled out of classes before the school year ends, or can be enrolled in a new school months after the school year has already begun.

The interrupted school years can keep children from succeeding academically, often causing them feelings of frustration and discouragement, as well as creating learning barriers that are difficult to overcome. Without the appropriate support and interventions, migrant students are pushed out of school. In fact, farmworker youth have a high school dropout rate four times the national rate.²⁶ Without an education, they are often trapped in the same generational poverty their parents faced.

(Continued on page 5)

²⁴ Bytowski, Jeffrey R. DO; Squire, Deborah L. MD*. Heat Illness in Children. *Current Sports Medicine Reports* 2(6):p 320-324, December 2003.

²⁵ Children in the Fields Campaign. *The Struggles You Should Know* (2021) <https://afop.org/cifc-publications-and-resources/>.

²⁶ Human Rights Watch. *Child Farmworkers in the United States: A “Worst Form of Child Labor”*. November 17, 2011. <https://www.hrw.org/news/2011/11/17/child-farmworkers-united-states-worst-form-child-labor>.

6. **Human trafficking & sexual harassment:** Agricultural work is low-pay, the jobs are often unpredictable and irregular, and many of the workers either have tenuous immigration status or their visas are tied to their employer, making for an environment that is ripe for exploitation with no recourse when farmworker children's rights are violated.



Photo: David Bacon

The National Human Trafficking Resource Center (NHTRC)--also known as the National Human Trafficking Hotline--recorded 5,042 reports of potential human trafficking cases across all industries in the United States in 2014.²⁷ Thirty-one percent of those cases involved minors. NHTRC states that "victims of labor trafficking have been found among the nation's migrant and seasonal farmworkers, including children as young as five or six years old who harvest crops and raise animals in fields, packing plants, orchards, and nurseries."²⁸

These same exploitative conditions lead to a high incidence rate of sexual harassment in agriculture, made worse due to the fact that it is a male-dominated industry. Farmworker women

and children – in particular, girls – report rampant harassment in the fields by foremen and other workers who are able to take advantage of them without penalty because of the isolated nature of their work environment and worker fear of reprisal were they to report it.²⁹

There are many facts about farmworker children that everyone should know about, and read about in CIFC's publication trilogy, which consists of three reports that detail the stories, struggles and conditions of child farmworkers.³⁰

"Never give up on your dreams. It could come true one day and if you give up, then it will never happen and your dream will never come true. You should always never stop fighting for that dream of yours." – Elizabeth, 12, California

Farmworker children should not receive less protection from labor laws because they must work in agriculture. At the end of the day, every child deserves the right to enjoy their childhood. And, just like Elizabeth, every farmworker child deserves the right to dream big and make those dreams come true. Because of this, AFOP's Children in the Fields Campaign and many other stakeholders continue to advocate for the farmworker community, especially for all farmworker children's right to a safe and healthy life. ■

²⁷ National Human Trafficking Resource Center. *Labor Trafficking in the Agricultural and Animal Husbandry Industries: 1/1/2014-12/31/2014*. https://humantraffickinghotline.org/sites/default/files/Labor%20Trafficking%20in%20Agriculture%202014%20Topical%20Report_FINAL_OTIP_Edited_06-09-16.pdf.

²⁸ National Human Trafficking Hotline. *Agriculture*. <https://humantraffickinghotline.org/en/labor-trafficking-venuesindustries/agriculture>.

²⁹ *Cultivating Fear | The Vulnerability of Immigrant Farmworkers in the US to Sexual Violence and Sexual Harassment*. Human Rights Watch, 15 May 2012, www.hrw.org/report/2012/05/15/cultivating-fear/vulnerability-immigrant-farmworkers-us-sexual-violence-and-sexual.

³⁰ *Children In the Fields: The Struggles You Should Know* (2021) <https://afop.org/wp-content/uploads/2022/01/CIFC-Publication-Final-2021-1.pdf>; *Children In the Fields: The Stories You Should Know* (2019) <https://afop.org/wp-content/uploads/2019/04/AFOP-CIFC-Publication-The-Stories-You-Should-Know-2019.pdf>; *Children In the Fields: The Facts You Should Know* (2018) <http://afop.org/wp-content/uploads/2018/04/CIFC-Publication-Final-1.29.18.pdf>.

EYE ON FARMWORKER HEALTH

A summary of important recent developments in research on issues affecting the health and safety of agricultural workers.



[Pesticide exposure among Latinx child farmworkers in North Carolina](#)

Authors: Arcury TA, Chen H, Arnold TJ, Quandt SA, Anderson KA, Scott RP, Talton JW, Daniel SS.

Source: *Am J Ind Med.* 2021 Jul;64(7):602-619. doi: 10.1002/ajim.23258. Epub 2021 May 25. PMID: 34036619; PMCID: PMC8819502.

Previous research studies have documented widespread pesticide exposure among Latinx male and female farmworkers and Latinx children living in farmworker communities. These exposures occur in both occupational and residential settings. In children, these exposures can cause adverse effects on neurocognitive development. However, U.S. labor regulations allow minors to work in agriculture.

The authors of this study used data collected in the *Hired Child Farmworker Study* to describe pesticide exposures among Latinx child farmworkers in North Carolina and to identify the factors associated with these exposures.

The *Hired Child Farmworker Study* is a community-based participatory research study conducted through a partnership between Student Action with Farmworkers and Wake Forest School of Medicine. The study collected exposure data from participants between the ages of 10 and 17 years old. Participants were self-identified Latinx/Hispanic child farmworkers who spoke Spanish or English and had been employed in farm work in the previous three months.

Interviews concerning personal and work characteristics were conducted from 2017 through 2019 by bilingual interviewers employed by farmworker services organizations. Pesticide exposure data was collected in 2018 and 2019 using silicone wristbands. A total of 186 unique individuals took part in the study in 2018 and/or 2019. There was some overlap between the groups, with some participants taking part only during one of the two years and others participating both years.

Participants who were employed--whether in agricultural or non-agricultural work--were asked to wear a silicone wristband for a single day while working, while those who were not employed were asked to wear it during normal daily activities. Extracts of particulate matter collected from the wristbands were analyzed for 70 pesticides and pesticide degradation products, which belonged to 14 classes of pesticides (e.g., organochlorine, organophosphate, pyrethroid, etc.). Concentrations were calculated only for pesticides with detections above the limit of detection and with a minimum number of 20 wristbands with detections.

In 2018, 96 of the 173 participants (55.5%) were employed as farmworkers during the previous 3 months, in 2019 the figure was 80 of 156 (51.3%). Approximately 22% in both years were migrant workers (i.e., established a temporary residence across state lines for agricultural employment.) In 2018, 79.2% of those employed in farmwork during the previous three months (43.9% of all participants) wore a silicone wristband for one day while doing farm work; in 2019, 75% of them (38.5% of all participants) did so. The three most common crops on which participants worked on the day they wore the wristband were tobacco, berries and tomatoes.

The number of individual pesticides or degradation products detected were as follows (grouped by class): 8 pyrethroids, 26 organochlorines, 10 organophosphates, 3 phenylpyrazole, 4 dicarboximide, 2 dinitroaniline, 2 of any aniline or chloroacetanilide. There were also four detections of benzenedicarboxylic acid - Dacthal and one detection of oxadiazole - oxadiazon. In both years, over two-thirds of participants had detections of at least one pyrethroid insecticide, and over half had a detection of an organochlorine. In 2018, 51.4% had a detection of an organophosphate, and 34.0% in 2019.

(Continued on page 7)

(Continued from page 6)

The most frequently detected pyrethroid was cypermethrin (48.6% of participants in 2018 and 47.4% in 2019); the most frequently detected organochlorine was gamma-chlordane (23.7% in 2018 and 30.8% in 2019); and the most frequently detected organophosphate was chlorpyrifos (38.7% in 2018 and 30.8% in 2019).

In all, 69.9% of child farmworkers had a detection for at least one pyrethroid in 2018 and 67.9% in 2019. In 2018, 51.4% had a detection for at least one organochlorine, and 55.1% in 2019. 51.4% of participants had a detection of at least one organophosphate in 2018, and 34.0% in 2019. Only 22 children in each year had no detections of any pesticide.

Gender, age, whether the participant was engaged in any farm work that year, and whether they wore the wristband on a day when they were engaged in farm work were not associated with the detection of at least one pyrethroid, organochlorine, organophosphate or phenylpyrazole. The only exception was that in 2019 the detection of any pyrethroid was significantly associated with age, with those aged 15 years or younger more likely to have a detection.

The number of pesticide classes detected was significantly associated with child age in both 2018 and 2019, with those aged 15 years or younger having a greater number of pesticide classes detected (a mean of 2.41 in 2018 and 2.37 in 2019) compared to those 16 or 17 (2.11 in 2018; 3.98 in 2019) and those aged 18 or older (1.69 in 2018; 3.58 in 2019). Children who did not do any farm work had significantly more detections of specific pesticides in 2018 (4.49 versus 3.52).

The results of the study indicate there is widespread exposure to pesticides among child farmworkers and children living in farmworker communities in North Carolina, even when they are not engaged in farm work, a finding that is consistent with studies done elsewhere in the U.S. Many of the pesticides detected more often among participants not engaged in farmwork were in the pyrethroid and organochlorine categories. While pyrethroids still have agricultural and residential uses, the organochlorines have been banned for decades.

The authors recommend further research to document the extent of these exposures and their health consequences in the short and long term, but emphasize that existing data on exposure and health effects already support the adoption of policies to reduce pesticide exposure of farmworkers in residential and occupational settings. Such measures should focus on the following: the elimination of pesticide residue from the environments in which farmworkers and their communities are exposed; changing how pesticides are applied and reducing the amounts used; improvements in occupational safety; and changing agricultural child labor policies to make them consistent with those that govern other industries. ■



Photo: Adobe Stock



Menstrual Cycle Patterns and Irregularities in Hired Latinx Child Farmworkers

Authors: Varnell RR, Arnold TJ, Quandt SA, Talton JW, Chen H, Miles CM, Daniel SS, Sandberg JC, Anderson KA, Arcury TA.

Source: *J Occup Environ Med.* 2021 Jan 1;63(1):38-43. doi: 10.1097/JOM.0000000000002065. PMID: 33105405; PMCID: PMC8842072.

Many child and adolescent farmworkers are exposed to pesticides in the workplace and at home, but often lack training in pesticide safety. Some of these pesticides are endocrine disruptors (chemicals that can interfere with hormones in the body). Exposure to endocrine disrupting chemicals (EDCs) is associated with menstrual irregularities. The purpose of this study was to describe the occurrence of menstrual cycle irregularities among a group of hired adolescent farmworkers in North Carolina.

This study was part of a community-based participatory research study—the Hired Child Farmworker Study—carried out by the Wake Forest School of Medicine, Student Action with Farmworkers, and East Carolina University. Researchers recruited participants who were between the ages of 10 and 17 years old, self-identified as Latinx, had been employed in farm work in the previous three months, and were fluent in Spanish or English. Following an initial 2017 survey, researchers conducted clinical examinations and follow-up surveys in 2018 and 2019. Fifty-three females completed the clinical examinations and questionnaires in 2019. Nine participants were excluded from the analysis because they had never had a period, were using a hormonal contraceptive, or did not answer questions regarding their menstrual period. The remaining 44 participants are included in the analysis.

The researchers analyzed data obtained from a clinical questionnaire and examination, the latter of which included spirometry tests, musculoskeletal examinations, and measurements of height and weight. The questions regarding participants' menstrual cycle patterns were based on recommendations in an opinion paper published by the American College of Obstetricians and Gynecologists (ACOG). Passive sampling for pesticide exposure was done in 2018 through the use of silicone wristbands worn by participants for one day and later analyzed for residues of 14 classes of pesticides. These pesticide classes included pyrethroid, organochlorine, and organophosphate pesticides, among others.

At the time of the 2019 clinical examinations and questionnaires, participants' ages ranged from 13 to 20 years old, and their gynecologic ages—that is, the time since their first period—ranged from 1 to 11 years. One quarter (25%) were between the ages of 13 to 15 years old, 45.5% were between 16 and 18 years old, and 29.5% were between 19 and 20 years old. Over eleven percent (11.4%) had a gynecologic age between 1 and 2 years, 61.4% had a gynecologic age between 3 and 6 years, and the remaining 27.3% had a gynecologic age between 7 and 11 years. All participants had worked in farm work during the year when they were recruited (2017) and 47.7% of them did so in 2019. One third (33.3%) were classified as overweight and 26.2% were classified as obese. In all, 29.6% reported having worked in farm work one year in their lifetime, 25.0% had worked for two to three years, and 45.4% had worked for four or more years.

The vast majority of participants (92.9%) had at least one pesticide detected. The most common classes of pesticides detected in the silicone wristbands were pyrethroids (71.4%), organochlorines (57.1%) and organophosphates (45.2%).

Half (50.0%) of the participants had at least one menstrual irregularity. The most common was irregular length of cycle—defined as less than 21 days, more than 45 days, or a cycle that is too irregular to tell—which was reported by 38.6% of participants. Other irregularities reported were 90 days or more without a menstrual period (20.4%), age at menarche (age at first period) greater than 15 years (2.3%), and menstrual period lasting longer than 7 days (2.3%). None of the participants reported using more than 6 pads or tampons per day. Early menarche (menarche at less than 11 years of age) is not an irregularity per ACOG standards, but was reported by 22.7% of participants.

(Continued on page 9)

(Continued from page 8)

Among the personal characteristics analyzed, only age was associated with any type of menstrual irregularity; the older the participant, the more likely they were to report an irregularity. The percentage of participants with irregularities was 13.5% among those 13-15 years old, 40.9% among those 16 to 18 years old, and 45.5% among 19- to 20-year-olds. No statistically significant associations were found with gynecologic age, weight status category, or number of years in farm work.

Only 26% of study participants had ever received pesticide safety training. The three classes of pesticides detected most frequently (pyrethroids, organochlorines and organophosphates) are EDCs. EDCs can lead to menstrual irregularities by interfering with the amount of luteinizing hormone and the timing of ovulation. Since the silicone wristbands were worn for only one day, it is not possible to determine whether there was a statistically significant association between pesticide exposure and menstrual irregularities.

The 13.7% of participants whose cycle length fell outside the ACOG parameters is similar to the expected proportion of 10%. However, the 25% who reported that their cycle was “too irregular to tell” is much higher than the 3% of females between the ages of 13 and 20 years who reported in the 2017-18 National Health and Nutrition Examination Survey (NHANES) that their periods were not regular over the last 12 months. In addition, 20.4% of participants were in the 95th percentile of menstrual cycle length (90 days or more without a menstrual cycle, per ACOG data). The data indicates that study participants had more irregularities than expected based on ACOG guidelines and NHANES data.

The association between age and menstrual irregularities may be due to the length of participants’ exposure to pesticides. Gynecologic age was not related to irregularities, which suggests that the number of menstrual cycles experienced does not explain the frequency of irregularities.

Studies of adults have found an association between EDC exposure through farm work and/or from living in proximity to farms and having long, irregular cycles. Although no studies have attempted to determine whether the same is true for hired adolescent farmworkers, researchers have found that adolescents who live near agricultural fields are more likely to experience irregular cycle length and bleeding between periods. Although early menarche is not considered a menstrual irregularity by the ACOG committee opinion, the 22.7% of study participants with early menarche is notable when compared to 2015-2018 NHANES data, which indicate that 13.65% of 13- to 20-year-olds had menarche before the age of 11.

In addition to EDC exposures, adolescent farmworkers may also experience chronic stressors and physical factors (such as higher BMI) that are also associated with early menarche and other menstrual cycle effects. EDC exposure, however, remains a concern given the potential impact on their future health. ■



Photo: Adobe Stock



Structural Vulnerability and Occupational Injury Among Latinx Child Farmworkers in North Carolina

Authors: Arnold TJ, Arcury TA, Quandt SA, Mora DC, Daniel SS.

Source: *New Solut.* 2021 Aug;31(2):125-140. doi: 10.1177/10482911211017556.

Epub 2021 May 13. PMID: 33982609; PMCID: PMC9075681.

Latinx child farmworkers are exposed to occupational risks that include heat-related illness, accidents involving machinery and tools, agrochemicals, green tobacco sickness, discrimination and sexual harassment. The purpose of this study was to qualitatively understand the types of injuries experienced by Latinx child farmworkers and their view and experience of these injuries. Furthermore, the researchers sought to understand the structural factors that increase child farmworkers' vulnerability to injury while simultaneously disempowering them.

The researchers worked with farmworker-serving organizations to recruit 30 child farmworkers (13 girls; 17 boys) between the ages of 10 and 17 years old who were fluent in English or Spanish, self-identified as Hispanic or Latinx, and had worked in agriculture in the last twelve months. Fifteen were U.S.-born, while the other 15 were born in Mexico or Guatemala. Sixteen were seasonal workers and 14 were migrant workers. Most worked in tomatoes, blueberries and tobacco crops at the time they were interviewed. The sample included children from 13 different counties and regions in North Carolina.

Semi-structured interviews with participants addressed personal characteristics, family, housing, community, farm work experience, work organization, work risk, and personal and observed occupational injury experience.

Twenty-eight of the 30 participants (93.3%) reported having experienced at least one type of injury while engaged in farm work, and most had experienced more than one type of injury. Twenty-three (76.7%) reported suffering musculoskeletal injuries (defined as pain in any area of the body); 15 (50%) reported traumatic injuries (including cuts, bruises and blows to the head); 21 (70%) reported dermatologic injuries; 8 (26.7%) reported possible sickness from pesticides; 12 (40%) reported possible heat-related illness; three (10%) reported possible green tobacco sickness (out of a total of nine participants who had experience working in tobacco); 11 (36.7%) reported experiencing or observing close calls; 16 (53.3%) reported observing an injury suffered by someone else; and 15 (50%) reported hearing of an injury that happened to another worker.

Children reported experiencing: back pain from bending over, pain from squatting for long periods, foot pain from long periods standing, cuts, scratches, falling off a parked tractor resulting in knee injury, a blow to the head, sunburn, rashes, itching, symptoms consistent with heat illness (dizziness, headaches) while working in high temperatures, nosebleed, fever, symptoms consistent with green tobacco sickness (such as dizziness and vomiting) after working with tobacco, and symptoms consistent with pesticide-related sickness (headaches, nausea, skin irritation, sour taste in the mouth) during or after known or suspected pesticide exposures. Many participants had observed others incur injuries such as slips, falls, cuts and other traumatic injuries, fainting in the heat, and vomiting while working in tobacco fields.

One child reported having heard of a young child being run over by a truck, resulting in a severe and disabling leg injury, while others reported hearing of workers dying in the fields. Others reported close calls involving machinery (often tractors) experienced by themselves or others. Some reported driving tractors, including one boy who first drove a tractor at the age of twelve.

Other topics that emerged during the interviews were the children's perceived need to "get used to" negative experiences such as pain or exposure to chemicals, the lack of bathrooms or handwashing facilities in some workplaces, lack of shade, and considering negative health effects as a normal part of the job.

(Continued on page 11)

(Continued from page 10)

The researchers in this study found that children generally had a reactive approach to preventing injuries, taking preventative measures only after they had already experienced an injury. This reflects dangerous work conditions in the fields as well as the lack of proper safety training on many farms. Issues of poor work safety also included equipment and work setups that were on a scale not proportionate to children's body size, as well as poor enforcement and oversight.

Child farmworkers have very limited ability to alter their work conditions. Labor laws governing agriculture—which exempt agricultural employers from some minimum wage and overtime requirements—child agricultural labor rules, agricultural exemptions from safety regulations, immigration laws, and trade policy all create conditions that negatively impact farmworkers. Lack of child care—which causes farmworker parents to bring their children to work—racism, discrimination, lack of access to health care, issues surrounding migration status, and language barriers create further disadvantages for farmworkers and their children.

The study authors recommend improving regulatory enforcement and injury surveillance, addressing structural factors that disadvantage child farmworkers, giving meaningful involvement in the development of reforms to the communities affected, improving training, and including child farmworkers when collecting agricultural workforce data. ■



Photo: David Bacon