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Unique Agricultural Safety and Health Issues of Migrant and Immigrant Children

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ABSTRACT. Immigrant and migrant youth who live and work in agricultural settings experience unique agricultural safety and health issues. Mobility, poverty, cultural differences, immigration status, language, education, housing, food security, regulatory standards and enforcement, and access to childcare and health care influence exposure risk and the well-being of this population. Approximately 10% of the migrant agricultural labor force is composed of unaccompanied minors, whose safety and health is further compounded by lack of social supports and additional stresses associated with economic independence. This paper examines the current demographic and health data, regulatory protections, and programs and practices addressing safety and health in this sector of youth in agriculture. Gaps in knowledge and practice are identified, with emphasis on data collection and regulatory limitations. Best practices in programs addressing the special needs of this population are highlighted. Recommendations identify seven priority areas for impact to promote transformative change in the agricultural health and safety concerns of unaccompanied minors and children of immigrant, migrant and seasonal farmworkers. This framework may be used to examine similar needs in other identified subpopulations of children as they merit attention, whether now or in the future.

KEYWORDS. Agricultural health, farmwork, migrant children, occupational safety

PURPOSE

Agriculture is one of the most dangerous occupations in the United States.[1] In addition to the inherent hazards involved with agricultural work, immigrant and migrant youth working or accompanying working parents in agriculture encounter further risks, including lack of supervision, weak regulatory protections, limited or no training, inexperience, poor safety precautions, lack of health insurance and access, language barriers, extreme poverty, undocumented immigration status, and geographical and cultural isolation. These factors exacerbate their risks for impaired growth and development, injury, illness, abuse, and violence. This paper considers the particular concerns encountered by unaccompanied minors and the children of immigrant, migrant, and seasonal farmworkers. These children are exposed to the hazards of agricultural labor on US farms as they accompany family members who live near and work in agriculture or as they participate in the workforce, but are distinct from the majority

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community of farm owners and families. Their special vulnerabilities warrant extra attention. Our findings and recommendations illustrate the need to attend to the diversity of people composing the landscape of our country's agricultural industry.

BACKGROUND

Farms and ranches in the United States employ 1.8 to 2.5 million migrant, seasonal, and year-round farmworkers.[2,3] The precise numbers of migrant and seasonal farmworker children are unknown, but estimates are available. The only routinely collected national information is the National Agricultural Workers Survey (NAWS), an employment-based, random survey of the demographic, employment, and health characteristics of the US crop labor force. The NAWS only collects data from those working at the time of interview, excludes workers younger than 14 years of age, and does not consider workers employed outside of crop agriculture. Noncrop agriculture, such as dairy and hog production, also includes immigrant workers as a large portion of the workforce.[4]

Approximately half of the crop farmworkers are parents, most with minor children who reside with them, even during migration.[2] The NAWS data for 1989 to 2006 indicate that children ages 14 to 17 made up 5.5% of the hired crop farmworker labor force, and others have estimated a teen (13 to 19 years) rate of 10%.[2,5] These include children working seasonally as well as children migrating with or without parental supervision.

The federal Migrant Education Program (MEP) supports children aged 3 to 21 who are dependents of fishery workers and farmworkers. Over 850,000 children were deemed eligible for these services in 2001, a 9% increase from 1998.[6] Migrant Head Start serves children birth to 5 years of age, with an annual enrollment of approximately 40,000, estimated to be 20% of those actually eligible for services (National Migrant Head Start Association Web site, www.nmshsaonline.org). By extrapolation, we conservatively estimate there are at least 1 million migrant and seasonal farmworker children residing in our nation. The proxy "migrant children" is used here, as educational and health research cited often labels children of farmworkers as "migrant" if they qualify for special assistance, though some families may be stationary seasonal workers.

Migrant farmworkers are not necessarily immigrant, and immigrant farmworkers do not necessarily migrate. However, most farmworker families are designated as Hispanic ethnicity. Households typically comprise Mexican-born adults with limited English abilities, low literacy skills, and limited parental education. Incomes are well below poverty thresholds, with individual farmworker annual earnings that range from $10,000 to $12,499.[5] Increasing numbers of workers come from indigenous Mexican and Central American populations, speaking neither Spanish nor English as their primary language.

Approximately 50% of farmworkers are unauthorized to work in the United States.[2] One study found 77% of migrant farmworker children had an unauthorized parent.[7] Farmworker women are 20% of the labor force, with 68% married and the mother of children under age 14 years.[5] According to a report by the General Accounting Office, 7% of farmworker parents took preschool children with them to the fields to work.[8] Casual accompaniment of children to the parents' workplace is attributed to lack of childcare and other social supports.

Children of farmworkers may also work in the fields. As noted, recent data show that 10% of farmworkers are teens.[2,5] These numbers are likely an underestimate, as informal work by young children alongside their parents may not be identified as child labor. In addition, current data systems do not collect information on all ages of youth who are legally permitted to work. Many children of farmworkers report beginning to work regularly as early as age 10.[9,10]

Unaccompanied minors are a subgroup of adolescent farmworkers. An estimated 80% are foreign-born, male, and the majority are without authorization to work in the United States.[2] They are at special risk of predation and abuse, with limited ability to navigate the unfamiliar terrain of US agricultural, social, educational, and medical settings. Additionally, professionals are often unaware of the supports and

protections available for these minors and have inadequate training in responding to their health and social needs.[11]

Particular aspects of culture need recognition for optimal prevention and care to occur. Programs that provide safety and health interventions must address factors such as language, literacy, poverty, mobility, and workplace practices. Moreover, the cultural roles of family systems, communication styles, decision-making, health beliefs, and child development values impact program success.

There is no national data system that collects information about farm-related injuries and fatalities among migrant minor workers as a subset of the larger farm workforce. In addition, limited data are available in the few states with comprehensive agricultural workers' compensation. Injuries to children working in agriculture may be misclassified as nonoccupational if clinicians do not explicitly assess and record work practices of youth.

AGRICULTURAL HEALTH AND SAFETY

All children residing on or near farms as well as those working in agriculture face risks from injury and exposure both in their homes and at the worksite. Karr outlines environmental hazards such as pesticide exposure, heat stress, sun exposure, dusts, and zoonosis (Karr, "Children's Environmental Health in Agricultural Settings"; this issue). Schwebel and colleagues highlight risks from operating tractors and machinery (Schwebel et al., "The Role of Child and Adolescent Development in the Occurrence of Agricultural Injuries: An Illustration Using Tractor-Related Injuries"; this issue). Farmworker children may face additional exposures related to substandard housing, inadequate water supply, and poor sanitation, as discussed below.

Toxic Exposures

A growing body of literature documents pesticide exposure in farmworker children. Children from agricultural families and those living in close proximity to farms are exposed to higher levels of pesticides than those without these attributes.[12–17] Exposure sources include paraoccupational exposure from direct contact with persons doing farmwork, such as parents or household members. Residential and environmental exposures from pesticide applications and from pesticide drift contribute to cumulative doses of toxic exposure.[15,18,19] Adolescent farmworkers are shown to underestimate their own pesticide exposure risk despite education.[9]

Pesticide exposure also affects fetal health. There is increasing evidence that maternal pesticide exposure is associated with teratogenic effects on the fetus. Strong associations between neural tube defects and limb reduction defects have been found in women working in or living near fields that had pesticides applied.[20,21] A long-term study of Latina women, children, and infants living in agricultural communities in the Salinas Valley of California, of whom 82% resided in farmworker families, showed associations between prenatal exposure to organophosphate pesticides and impaired intellectual and neural development of the child.[22,23] Unfortunately, usable occupational information is rarely included in birth registries and more studies are needed to understand risks and best practices in prevention of pesticide exposures.

Housing and Sanitation

Farmworker housing is typically crowded and characterized by inadequate kitchens, laundry facilities, and sanitary services.[24–26] Limited ability to launder and bathe prohibits cleaning off pesticide residues, infectious agents, and other agricultural contaminants. Crowding increases exposures to infectious disease, stress, and violence. Serious structural defects have been found in 19% to 34% of farmworker homes.[25,27] Some of the poorest housing has been noted for families who are recent immigrants, follow the crops, and reside in grower-supplied dwellings.[25]

Most of the water sources used to supply farmworkers in the fields, labor camps, or residential dwellings areas are private wells. These sources are poorly regulated, although

some states have standards in place specific to wells supplying farmworker labor camps.[25,28] In addition to infectious diseases, old unregulated wells have been found to have traces of agrichemicals and heavy metals. A study by the US Geological Survey showed that nitrates, found in fertilizers and animal wastes, were the most common contaminant of wells.[29] Nitrates are associated with "blue baby syndrome," as infants may develop cyanotic methemoglobinemia due to nitrates altering the oxidizing ability of hemoglobin in young infants.[30] Though there have been improvements in field sanitation, there are still reports that water and sanitation problems remain.[31]

Food Insecurity and Nutrition

The children of migrant agricultural workers experience high rates of food insecurity, hunger, and poor nutrition. Food security includes a ready availability of adequate safe food and the ability to acquire that food in a socially normative way, without resorting to stealing, scavenging, shelter services, or emergency rations.[18] Lack of access to transportation, food storage, and cooking facilities increases food insecurity. Several studies estimate that more than half of farmworker households are food insecure.[18,32–34] A Georgia study found farmworker families with children were 50% more likely to be food insecure than others in poverty.[32] In North Carolina (NC), Quandt and colleagues found farmworkers are 4 times more likely to experience food insecurity than the general population. Of those NC farmworker families, 10% experienced daily moderate hunger and 5% experienced severe hunger.[18] Researchers in Ohio estimated half of farmworker households are food insecure, with higher rates (56%) noted in households with children and 78% were found to be nutrient deficient.[34] By contrast, the same study found the average rate of childhood food insecurity in the United States to be 11%.

New immigrants are less likely to ask for help regarding food security. They are more likely to fear government intervention and are more stressed about balancing their household income with money sent to family in Mexico.[33,35] Migrant children are categorically eligible for the United States Department of Agriculture (USDA) supplemental food programs, namely Women Infants and Children (WIC) and school lunches.

Education

Despite federal programs designed to assist farmworkers' dependents, disparities in educational achievement persist. High school completion rates are unknown for farmworker children, but the government estimates a dropout rate 4 times the national average. The National Dropout Prevention Organization reports multiple risk factors for dropping out, all of which are found in the farmworker population. Of particular note are low parental education, low socioeconomic status (SES), immigrant status, high mobility, multiple schools, early adult-level responsibilities, assisting parents with decision-making, and working 20 hours or more per week.[36] States require at least 180 days of school attendance per year for grade completion, and the mobile working lifestyle of farmworkers complicates both continuity and attendance rates.

A study of Title I schools serving migrant populations compared to nonmigrant subpopulations showed migrant status Title I schools fared worse across multiple categories.[37] (Title I refers to the Congressional designation of schools meeting criteria for serving disadvantaged children.) The Migrant Education Program (MEP), under the US Department of Education, helps ensure that children who move among the states are not penalized by disparities in curriculum, graduation requirements, or state academic content and student academic achievement standards. Despite these efforts, data from school year 2008–2009 show migrant students consistently performed at or near the bottom of all subcategories of students tested across all states and grade levels. Approximately 23% of migrant children enroll after the first month of school begins, and up to 40% leave during the school year due to migration, disrupting continuity.[38]

Legal and Regulatory Concerns

There is a long history of agricultural exclusions under various laws, with deficient federal worker protection standards.[39,40] The Fair Labor Standards Act (FLSA), passed in 1938, does not require minimum wage be paid for certain farm work; exempts overtime pay requirements for all agricultural work; has fewer protections for all minors working in agriculture; and allows child labor as young as age 12.[41]

Many studies of migrant youth report regular work is common by age 11, often with hours that mirror those of adults.[9] Migrant parents report financial need and lack of childcare as reasons for their children being in the fields. Many children add their crop work to their parents' totals, receiving no separate pay for employment. In 2009, labor violations were levied in Arkansas, North Carolina, and New Jersey against farm owners employing young children.[10] This action accompanied a highly publicized news report about children on blueberry farms in Michigan.[42]

Health Care Access and Special Needs

Access to health care is compromised affecting both prevention and treatment of agricultural injuries. Foreign-born children are largely ineligible for Medicaid and children of an unauthorized parent receive limited services. Mobility compounds Medicaid attainment, as Medicaid does not typically extend interstate reciprocity. The application process is time consuming and often unfamiliar to immigrant parents.[43] Although some farmworker parents report regular access to care for their children, many lack continuity with regular providers and do not receive preventive care on standard schedules due to their multiple access barriers.[44]

Federally Qualified Health Centers (FQHCs) provide sliding-fee care to the nation's underserved communities, with over 155 of these centers designated as migrant health centers. Health centers are required to provide culturally appropriate comprehensive primary care, including dental and behavioral health services, and to provide a Patient Centered Medical Home despite mobility or residency status. Approximately 865,000 farmworkers and their dependents were served by FQHCs in 2009, with this number including retired or disabled farmworkers.[45]

FQHCs are not required to count farmworkers and may not accurately identify migrants unless the center has designated special population funding from the Health Resources and Services Administration (HRSA) to provide migrant health care. Despite 60 years of federal funding, FQHCs are not required to measure health status of farmworker populations in any way disaggregated from the total vulnerable population. Health disparity data exist only in aggregate for all 18.8 million patients served, whether urban, rural, homeless, or migrant.

Migrant health centers report that the hardest to reach populations are adult males and adolescents. A regional study of unaccompanied minor farmworkers showed health care access was limited due to clinicians' misinformation on parental consent laws and minors' inexperience with caring for themselves.[11] Adolescent males typically entered care for an acute injury or illness, whereas females also accessed care for reproductive health needs. Adolescent workers in California reported limited knowledge of occupational hazards such as heat stress and chemical exposures.[46]

Mobile migrant youth face hazards due to travel that may include informal transnational transportation and frequent relocations to new communities. Unaccompanied minors may be unable to contact their parents and be without social supports. Social isolation contributed to drug and alcohol use in a California (CA) study of mobile unaccompanied farmworker youth.[46] From school district eligibility to Medicaid and supplemental foods programs, mobility causes frequent reenrollment and proof of residency that hinders continuity of services.

Farmworker children experience multiple barriers to preventive health care. A NC study found 53% of migrant children had unmet medical needs, with lack of transportation and lack of parental knowledge of health services location being primary obstacles. Unmet needs were correlated with markers of poor health and high

rates of caretaker work stress.[47] In a CA study of unaccompanied minor farmworkers, youth reported that they feared sickness, as it would impair their earning capacity, but that they did not know how to access care when they did need it.[46] Migrant children were underenrolled in Medicaid and experienced both intrastate and interstate barriers to continuity of Medicaid.[48] Even with Medicaid coverage, migrant children are subject to systemic disenfranchisement from care, illustrated by the successful class action suit brought by Linda Frew against the state of Texas, and the findings by Casteneda on Florida's limited oral health access to migrant children.[49] Oral health was listed as the number one health concern of Florida farmworkers, but Medicaid providers are in short supply.[50]

Immunizations are markers for access to health care. Numerous initiatives supporting immunization of 2-year-olds have occurred, but immunization needs of adolescents and adults remain unmet, with migrant adolescents considered particularly vulnerable.[51] New York State is unique in designating migrant and seasonal farmworkers as a high-risk population for immunization eligibility using 317 funds from the Centers for Disease Control and Prevention (CDC). These funds refer to set aside funds that may be used to augment childhood vaccine provision using CDC funding. Many states use these funds for newer vaccines or for other childhood vaccine needs.

These children are at risk for infectious diseases associated with transnational mobility, overcrowding, and occupation. Migrant children have been identified as at special risk for tuberculosis.[52,53] Diseases such as dengue fever, botfly infestation, parasites, and hepatitis A may be endemic in countries of origin and evidenced in households of migrant families. Dental care needs are compounded by parental lack of dental health, shortage of Medicaid providers, multiple water sources with variable fluoride content, loss of state program support, interrupted care, and changing dietary practices associated with migration.[49,54]

Violence often accompanies the migration experience, with women and children at increased risk of assaults, trafficking, and predation.[55] Primary care providers have limited skills and resources to address posttraumatic stress disorder (PTSD), human trafficking, intimate partner violence, and culturally defined syndromes. (Culturally defined syndromes are understood idiomatically within local or regional cultures. Two examples are *susto* and *nervios*, both are behavioral health conditions, and similar to PTSD and depression, but not completely explained by those technical terms.) Workplace sexual harassment has been reported by 80% of women farmworkers, of special concern for adolescent females.[55]

GAPS IN KNOWLEDGE AND PRACTICE

Demographic and health data on migrant workers and their children remain sparse. NAWS and the Uniform Data System (UDS) of FQHCs are routinely collected instruments, but their scope is narrow in regard to age, health condition, and outcome. Migrant Head Start and Migrant Education data are not interfaced, have separate eligibility definitions from migrant health programs, and do not require information on child labor. Birth records do not document parental occupation nor is there a birth registry of suspected toxin-related adverse events.

Surveillance efforts focusing on childhood agricultural injuries, such as the Childhood Agricultural Injury Survey (CAIS) developed by the National Institute for Occupational Health and Safety in partnership with the US Department of Agriculture, rely on sampling frames restricted to farm households or farm operations.[56] This methodology does not permit the collection of information on work and injury experiences of hired adolescents, particularly migrant, and unaccompanied minors.[57] The relationship between migrant child labor and overall health is unknown.

Health professionals generally have limited knowledge about the needs of these children. Graduate medical education broadly disregards occupational and environmental health–related issues of both adults and children.[58–60] Practicing primary care clinicians report that they are unprepared for the environmental

and occupational health concerns of their patients.[61–63] Pediatric training offers little on adolescent workforce issues, with no board certification competencies related to working youth.[64]

RECOMMENDED STRATEGIES

In addition to those aspects of environmental health and safety faced by all children on farms, children in these special populations experience vulnerabilities related to immigration, poverty, mobility, culture, and education. Though the boundaries between work and home are often blurred for farm families, these children have lives permeated by their own or their parents' occupational experiences. Increasing their safety and health is not just a matter of making materials available in Spanish or of teaching task safety, but integrating all salient elements into a framework that is operational across multiple spheres of influence, including farms, schools, homes, and health care facilities.

The following recommendations are organized around seven priority areas to promote transformational change in addressing the agricultural health and safety concerns of unaccompanied minors and children of migrant and seasonal farmworkers. This framework may be used to examine similar needs in other identified subpopulations of children as they merit attention, whether now or in the future. Finally, these recommendations are only a start and are given here as priorities for focused immediate engagement in a national call to action. These recommendations are by no means exhaustive in number or content.

I. *Leadership*
   a. Develop programs in agricultural and health leadership careers for underserved farmworker communities through integrated efforts with schools, health organizations, community services, and agribusiness.
   b. Develop a national leadership forum chaired by a federally funded farmworker health organization and composed of experts in farmworker health and safety, agribusiness, education, housing, and childcare with representation from farmworker communities to transform child health and safety for all children in farm environments within the United States.

II. *Injury and Disease Data*
   a. Enhance and improve NAWS to extend the age range of children surveyed from age 14 to age 12 with attention to unaccompanied minor status, migrant status, ethnicity, and educational level.
   b. Enhance and improve the methodology employed in current surveillance efforts to track childhood agricultural injury such as the Childhood Agricultural Industry Survey (CAIS) to better capture underrepresented populations.
   c. Promote the mandatory inclusion of childhood agricultural injury incidents and exposures into electronic health record systems.
   d. Revise the migrant and seasonal farmworker Uniform Data System collection of the Health Resources Services Administration FQHC programs to address health disparities experienced by this population.

III. *Research*
   a. Conduct research on the health and safety status of children of migrant and seasonal farmworkers that directly measures effects of child labor, child accompaniment to the workplace, and child mobility on their physical, emotional, educational, and spiritual growth and development.
   b. Conduct research on the various childcare practices utilized by farmworker parents, assessing quality and type of care provided.
   c. Conduct research on the prevalence of occupational illnesses, water-borne disease, behavioral and cognitive impairments, and physical disabilities present in this population.
   d. Conduct research on the social and educational impact of Migrant Education and Migrant Head Start, including high school completion rates, age for

grade characteristics, and achievement levels.
e. Conduct research on the social, physical and educational needs of unaccompanied minors in farm work.

IV. *Public Policy*
a. Address legal and regulatory gaps excluding agriculture from health and safety protections, wage and hour protections, and child labor protections afforded to workers in other industries.
b. Support the proposed Children's Act for Responsible Employment (CARE Act) that would amend age and work hour standards for farm work done by children to be in keeping with other industrial national standards on child labor.
c. Advocate for Medicaid reciprocity across state lines for all children and streamlined entry into care for children of migrant farmworkers.
d. Expand funding for Migrant Head Start to a penetration of at least 50% through the development of "look alike" programs that can qualify for federal monies to serve farmworkers' children year round.
e. Promote policy change to Food Stamps such that farmworker household members have automatic eligibility, similar to federal categorical eligibility employed by WIC and the School Lunch Program.
f. Advocate for comprehensive immigration reform as well as the Agricultural Job Opportunities Benefits and Securities Act, proposed legislation that will provide a legal, stable labor supply and fundamental safety protections to immigrant farmworkers.

V. *Organizational Policy*
a. Encourage all health care professional organizations to formally support the care of unaccompanied minors and the children of farmworkers through policies promoting their health and welfare, including collaborative efforts to promote child welfare regardless of parental immigration status.
b. Encourage the incorporation of occupational health and safety curricula into standard health professions education and training programs for those serving youth.

VI. *Intervention*
a. Childcare: Support employer-based childcare that is responsive to the unique needs of mobile farmworker families.
b. Education: Develop and support educational initiatives that facilitate high school completion in nontraditional settings, including distance learning and year round support for unaccompanied minors and other at-risk farmworker youth.
c. Health and Safety: Promote the use of evidenced-based, culturally appropriate models such as interventions that use community health workers *(promotores de salud*) to educate farmworker parents about agricultural safety and health.
d. Health care and Health care Access:
i. Develop supplemental insurance programs for these families, similar to the pharmaceutical patient assistance programs, enabling comprehensive primary care and provisions for required emergency, dental, and specialty care.
ii. Promote interventions to support and train practicing clinicians to better recognize and manage environmental and occupational health–related injuries, exposures, and illnesses in youth living and/or working in agricultural settings.
iii. Develop electronic health record interchange capabilities to allow medical records to follow migrant children and adolescents, promoting the concept of "The Mobile Medical Home."
e. Support food security interventions such as employer-based gardens, community gardens, and summer meal programs.

f. Support expansion of farmworker housing models with collaboration between municipal, state, federal, and private organizations.
g. Develop and support continuing educational initiatives in agricultural health and safety for employers, clinicians, educators, social service providers, and safety professionals to assist them in fostering best practices to incorporate a culturally competent and relevant approach to training, services, and care to migrant youth and families.

VII. *Knowledge Mobilization and Dissemination*
a. Support the identification and dissemination of best practices related to the health and safety of unaccompanied minor farmworkers and children of migrant and seasonal farmworkers through organizations such as the Migrant Clinicians Network and the National Children's Center for Agricultural Health and Safety.
b. Identify and promote best practices in outreach services related to education, health, safety, and continuity of care.

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