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Agricultural Occupational Health and Safety Perspectives Among Latino-American Youth

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Abstract. Agricultural work is one of the most dangerous jobs for adolescents. Through a university-community partnership, the authors surveyed young primarily acculturated Latino-American farmworkers 14 to 18 years of age regarding their agricultural work experience. Topics included occupational health and safety education, work history, and information sources. The authors also evaluated the Rapid Clinical Assessment Tool (RCAT), a pictorial tool for identifying agricultural tasks to enhance discussion with clinical providers. One hundred forty youth with farmwork experience completed the survey; 6% reported a previous work-related injury or illness and 53% reported receiving some workplace health and safety training. Correct identification of legally restricted duties for youth varied but were generally low: participants identified working alone past 8 PM (57%), driving a forklift (56%), doing roofing work (39%), working in freezers (34%), and driving a delivery vehicle (30%). The Internet was identified as the most likely and reliable place youth would go to find information on workplace health and safety. Few (15%) reported clinician-initiated conversations on occupational health; however, a high proportion responded positively to questions regarding the usefulness of the RCAT for this purpose. This study highlights the need for workplace health and safety guidance for youth employed in agriculture. The results support Internet-based outreach and use of the RCAT to help facilitate occupational health discussions in clinical settings.

KEYWORDS. Agricultural workers, Latino-American, youth

INTRODUCTION

Agriculture workplace fatality rates among youth under age 18 are extremely high, accounting for approximately 42% of workers killed during the years 1992–2000, and

10% of workers killed in the 10-year period from 1998 to 2007.^{1,2} Although farmwork has one of the highest nonfatal injury rates for workers, reported farmwork injury and illness rates are considered undercounted.^{3–5} Young farmworkers are exposed to physical hazards,

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a variety of chemical hazards in the form of dusts, pesticides and fertilizers, and excessive noise from proximity to heavy machinery.^{6,7} Although general injury prevention is a cornerstone in the clinical care of youth, it does not typically encompass workplace health for young workers.⁸ Regulatory protections under the labor laws for children and youth working in agriculture are unchanged since they were first promulgated in 1970, and are fewer and less protective than those for youth working in other industries.⁹ The need to augment preventive efforts to protect adolescent farmworkers has been highlighted in national reports and research.^{1,2,10–12}

Young Latino-American farmworkers face enhanced risk for occupational injury and illness.^{2,13} Moreover, Latino-American workers, and particularly agricultural workers, have a higher fatal occupational injury rate than other workers.^{14,15} It is estimated that a high proportion of young agricultural workers 14 to 19 years of age are undocumented, and cultural and linguistic barriers may interfere with reporting of health concerns, requesting or accessing of occupational health and safety information, and/or accessing of health care.^{16,17} Economic pressures coupled with the seasonal, sporadic nature of some agricultural work may result in exposure to concentrated, intensive work periods. This may increase the risk of injury as well as interfere with academic performance.^{18–21} A 1999 telephone survey of working teens, conducted in Yakima Valley in Washington State, found that the Latino-American agricultural workers were more likely to work long hours and reported a higher injury rate than the non-Latino workers.²²

We sought to assess young workers perspectives and experiences regarding occupational health and safety through a youth survey for the purpose of developing data-driven projects addressing occupational health concerns of young workers in Yakima Valley.^{23,24} For decades, Latino-American farmworkers have migrated to this region, which leads the United States in the production of apples, cherries, and pears.²⁵ This region is also the largest dairy producer in Washington State.²⁶ To date, over 60% of youth in Yakima

County are Latino-American.²⁷ In anticipation of future outreach activities, we included questions on modes and preferences of accessing information. We also incorporated questions regarding the acceptability of a new agricultural hazard assessment tool developed by the Migrant Clinicians Network (MCN).²⁸ This Rapid Clinical Assessment Tool (RCAT) was designed for fostering engagement of clinicians with young agricultural workers on hazard identification and related prevention messaging.

METHODS

Community-Based Participatory Research (CBPR) Framework

The youth survey was conducted as part of El Proyecto Bienestar (EPB), a CBPR partnership consisting of the University of Washington (UW), Heritage University, the Yakima Valley Farm Workers Clinic, and Radio KDNA.²⁹ For many years EPB sponsored a UW undergraduate extension course on environmental health research methods. Conducting surveys was a practical application of the coursework and has supported EPB objectives to identify and address occupational and environmental health concerns in affiliated communities. EPB reviewed all the documents prepared for the youth survey and conducted pilot tests of the Spanish translations. In 2012, 14 first-generation college-bound students enrolled in this course carried out the survey using a convenience sample approach. Recruitment of survey participants occurred during a 3-week period in July and August of 2012, and additional surveys were collected in fall of the same year.

Survey

The survey instrument contained 45 questions and was available in English and Spanish. Survey content focused on demographics, modes for accessing information, work history, occupational health and safety education experience, and an evaluation of MCN's RCAT. The bilingual RCAT task page contains 20 illustrations of distinct agricultural tasks that can be linked to occupational hazards.²⁸

We included work experience questions with two different objectives: “Have you ever had a job that paid you wages?” was asked with follow-up questions to determine work history, and “Have you ever worked on a farm after the age of 11” to screen participants for the RCAT evaluation questions. In addition, we investigated motivation for work using questions from the State of Massachusetts Teens at Work Surveillance Survey.³⁰ To assess knowledge of Washington State child labor regulations, we asked about a select number of prohibited work activities for teens.³¹ Lifetime work injury experience and workers’ compensation knowledge questions were chosen from the National Agricultural Workers Survey (NAWS).¹⁶ We added additional questions to determine whether youth discuss workplace health and safety issues with their parents and clinical providers.

Survey administration took place at multiple community sites identified by EPB’s Community Advisory Board: sites included health fairs, gas stations, popular lunch spots, grocery stores, food banks, churches, and clinic waiting areas. Site managers received research statements and approval was obtained prior to scheduling data collection in public areas.

Although the UW Human Subjects Division reviewed the project and determined it did not meet the definition of research requiring human subjects’ protection, all students received training in the ethical principles of human subjects’ research and completed the Web-based student research module provided by the Collaborative Institutional and Training Initiative.³² They carried out informed consent protocols for this anonymous, primarily self-administered survey and offered worker safety sunglasses to participants. Data collection at clinical sites met the confidentiality provisions of the Patient Safety Rule required by the Health Insurance Portability and Accountability Act (HIPAA).

Analysis

Survey recruitment was open to all 14- to 18-year-old youth; however, the focus of this analysis is on youth who reported work experience in agriculture, including on-farm work activities and food packing/warehouse work.

We generated descriptive statistics to characterize demographics, occupational health and safety experience, knowledge of Washington State agricultural youth employment restrictions, and assessment of the usefulness of the RCAT to facilitate work health and safety discussions in the clinic setting. To explore the possible need for various types of outreach approaches among youth based on language preference, we explored differences in responses for those reporting a preference for English versus a group comprising equal preference for English and Spanish or Spanish only. For the purpose of this paper we refer to those who expressed a preference for English as monolingual, and bilingual for those who expressed using both Spanish and English or a preference for Spanish. We conducted chi-square tests to determine statistically significant differences (P value of .05).

RESULTS

Characteristics of Youth Working in Agriculture

We administered 196 youth surveys using our convenience sampling approach. Seventy-four percent (145) reported having work experience. One hundred forty (97%) reported some agricultural work experience with or without wages, including work in packing houses, food warehouse farming work, as well as working on a farm. The majority of youth with agricultural work experience identified as Latino-American (76%) and 61% were male (Table 1). Eighty-three percent had lived in Yakima County for over 5 years and nearly two thirds had been born there (61%), whereas 16% reported being foreign-born. The majority (96%) completed the survey in English. When asked about their language of preference for information sources, 96 (69%) responded English, 41 (29%) reported a bilingual English/Spanish preference, and 3 (2%) preferred Spanish.

Eight (6%) youth reported having ever sustained a work-related injury or illness. Among these, five (63%) reported seeking

TABLE 1. Characteristics of Surveyed Youth Working in Agriculture (N = 140)

Characteristic	n	%
<i>Demographics</i>		
Age		
14–16	72	51.4
17–18	68	48.6
Sex		
Female	55	39.3
Male	85	60.7
Ethnicity		
Hispanic	107	76.4
Non-Hispanic	29	20.7
Don't know/No response	4	2.9
Born		
Yakima Valley	85	60.7
Washington State (outside Yakima)	11	7.9
USA (Not Washington State)	22	15.7
Foreign-born	22	15.7
Years in Yakima County		
0–5 years	20	14.3
6–15 years	34	24.3
15 years–All my life	83	59.3
Don't know/No response	3	2.1
Preferred Language		
English	96	68.6
English /Spanish, Spanish	44	31.4
<i>Agricultural work</i>		
Work history ^a		
Farming	120	85.7
Food packing/warehouse	30	21.4
Motivation for work		
Spending money	111	79.3
For home and parents	52	37.1
For self and family	65	46.4
Education savings	30	21.4
Other savings	24	17.1
Car expenses	41	29.3
Obtain career skills	19	13.6
Occupational injury ^b		
Job-related illness or injury		
Yes	8	6.2
No	117	90.0
Don't know/No response	5	3.8
Received medical attention for injury ^c		
Yes	5	62.5
No	2	25.0
Missing	1	12.5

^aOpen-ended response.

^bAmong 130 participants who reported a work history of working for wages.

^cAmong 8 who reported a work-related injury.

medical attention for the event. Most participants reported they had worked for wages (130, 93%). Performing farmwork was more

common than working in food packing or warehouse work. We explored differences in motivation or work type by language preference group and observed few differences (data not shown). A larger percentage of the bilingual language group (41%) reported having worked in a food packing/warehouse than monolingual English speakers (13%). Motivation for work was similar for both groups; however, among bilingual participants, providing support to their home and parents was significantly more important than among their monolingual peers (64% versus 25%).

Occupational Health and Safety Knowledge and Guidance

Table 2 summarizes the percentage of the 140 participants who correctly recognized restricted activities. A majority correctly identified working alone after 8 PM (57%) or driving a forklift (56%) as restricted. Less than half of respondents correctly identified five restricted activities: driving a vehicle for regular delivery, working at heights of more than 10 feet, working at a food processing plant, working in freezers, and roofing work. Furthermore, a majority was unaware or did not think they were eligible for workers' compensation insurance for medical care for work-related injuries (68%). Over 80% of participants did not know that they were eligible for workers' compensation time loss or wage benefits during injury recovery.

Among those who reported working for wages (N = 130), 68 youth (53%) reported that they had received some type of job safety training (Table 3). Eighty-seven youth (67%) reported their parent(s) had spoken with them regarding job safety. Very few reported having a medical provider ask them about their work (15%).

Modes and Sources of Health and Safety Information

Internet usage was nearly universal (Table 4). Only four participants reported never using the Internet, whereas 50% reported using it multiple times per day. Among those who used the Internet, the majority (78%) had access at home. Fifteen percent endorsed their use of the

TABLE 2. Knowledge of Washington State Child Labor Regulations (*N* = 140)

Knowledge	<i>n</i>	%
<i>Knowledge of duties restricted under age 18 years</i>		
Driving a forklift		
Correct (Yes—restricted)	79	56.4
Incorrect (No)	32	22.9
DK/NR	29	20.7
Driving a vehicle for regular delivery		
Correct (Yes—restricted)	42	30.0
Incorrect (No)	65	46.4
DK/NR	33	23.6
Working at heights greater than 10 ft		
Correct (Yes—restricted)	49	35.0
Incorrect (No)	54	38.6
DK/NR	37	26.4
Working at a food processing plant		
Correct (Yes—restricted)	60	42.9
Incorrect (No—not restricted)	43	30.7
DK/NR	37	26.4
Working in freezers		
Correct (Yes—restricted)	47	33.6
Incorrect (No—not restricted)	52	37.1
DK/NR	41	29.3
Working alone past 8 pm		
Correct (Yes—restricted)	80	57.1
Incorrect (No—not restricted)	33	23.6
DK/NR	27	19.3
Roofing work		
Correct (Yes—restricted)	55	39.3
Incorrect (No—not restricted)	45	32.1
DK/NR	40	28.6
<i>Knowledge of workers compensation</i>		
Knowledge of health insurance for job injuries		
Yes	45	32.1
No	58	41.4
DK/NR	37	26.4
Knowledge of compensation during injury recovery		
Yes	26	18.6
No	74	52.9
DK/NR	40	28.6

Note. DK/NR = Don't know/No response.

Internet to access health information. Accessing social media networks was the most frequently reported reason for Internet use (68%).

The Internet was the most common response to the question: “where would you go to find information about your work safety and health concerns?” (Figure 1). Family/friends and a regulatory authority (Washington State Department of Labor and Industries) or employer were also common responses. Differences by language

TABLE 3. Young Agricultural Workers Reported Guidance on Workplace Health and Safety (*N* = 130)^a

Item	<i>n</i>	%
In your previous jobs, did your employer train you on safety in the workplace?		
Yes	68	52.3
No	49	37.7
DK/NR ^b	13	10.0
In the past, has a doctor or nurse ever asked you about your work?		
Yes	19	14.6
No	99	76.2
DK/NR	12	9.2
In the past, have your parents talked to you about workplace safety?		
Yes	87	66.9
No	36	27.7
DK/NR	7	5.4

^aAmong 130 participants who reported a work history of working for wages.

^bDK/NR = Don't know/No response.

TABLE 4. Internet Use Among Youth Working in Agriculture (*N* = 140)

Item	<i>n</i>	%
How often do you use the Internet?		
Never	4	2.9
Few times a week	36	25.7
Once a day	30	21.4
Multiple times per day	70	50.0
Do you have Internet access at home? ^a		
Yes	107	78.7
No	28	20.6
Don't know/No response	1	0.7
What is the purpose for your personal use of the Internet (not job related)? ^{a,b}		
Connect with family/friends (E-mail/Skype)	17	12.5
Health information	21	15.4
School work	48	35.3
General use	65	47.8
Social media ^c	92	67.6

^aAmong 136 participants who use the Internet.

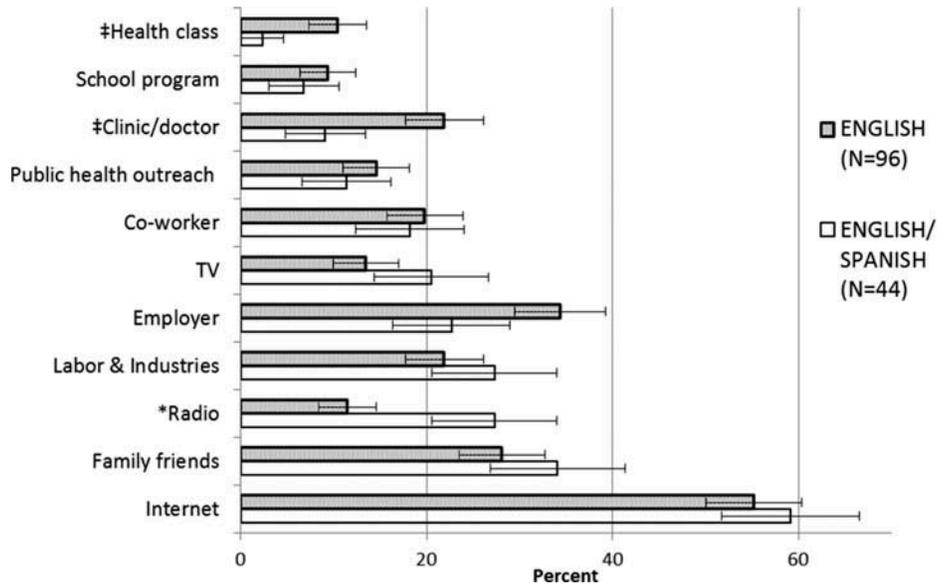
^bParticipants checked all that applied (243 responses).

^cFacebook, MySpace, Twitter.

preference groups included the radio, which was preferred by bilingual participants (26%) but not by monolingual participants (12%). The clinic was more commonly the choice of monolingual participants (22%) compared

FIGURE 1. Where would you go to find information about your work safety and health concerns?
 * $P \leq .025$, statistically significant differences in adjusted GM between Mexican Americans and other Latinos.

‡ $.025 < P \leq .10$, marginally statistically significant differences in adjusted GM between Mexican Americans and other Latinos.



with bilingual participants (9%). The Internet was also the top response as a reliable information source for both monolingual (55%) and bilingual (59%) participants (Figure 2). Both language preference groups identified doctor/clinic as a reliable source of information. Bilingual participants ranked the radio as a reliable source, but those who preferred English did not. Bilingual speakers were less likely to rely on the Washington State Department of Labor and Industries, employers, and coworkers as information sources.

Rapid Clinical Assessment Tool

The 114 participants who reported on farm-work experience completed RCAT evaluation questions. The majority (87%–89%) agreed that the RCAT made agricultural tasks easy to identify (89%) and that the overall tool was clear and easy to understand (87%) (Table 5a). Seventy-seven percent felt the RCAT made it easier to communicate with health professionals about work hazards, and that other workers would appreciate its use as well (75%).

Ninety of the 114 participants recorded their agricultural tasks using the RCAT tool. The most common tasks identified included tree fruit and field crop harvesting tasks such as lifting, pruning, climbing, and bending (Table 5b). Differences by language preference groups were observed for 6 of the 23 tasks (data not shown). Youth who preferred English/Spanish reported more lifting, pruning, climbing, and harvesting tree fruit tasks than the English preference group. More of the participants in the English group reported working with grain and hay (15%) than the English/Spanish group (3%).

DISCUSSION

There is a scarcity of data on occupational injury, health and safety training, and intervention effectiveness for Latino-American youth in the agricultural workplace. Using a community-engaged peer survey approach, we successfully collected perspectives on occupational health and safety from 140 youth

FIGURE 2. Which sources do you think provide the most reliable information about work safety and health?

* $P \leq .0.025$, statistically significant differences in adjusted GM between Mexican Americans and other Latinos.

‡.025 < $P \leq .10$, marginally statistically significant differences in adjusted GM between Mexican Americans and other Latinos.

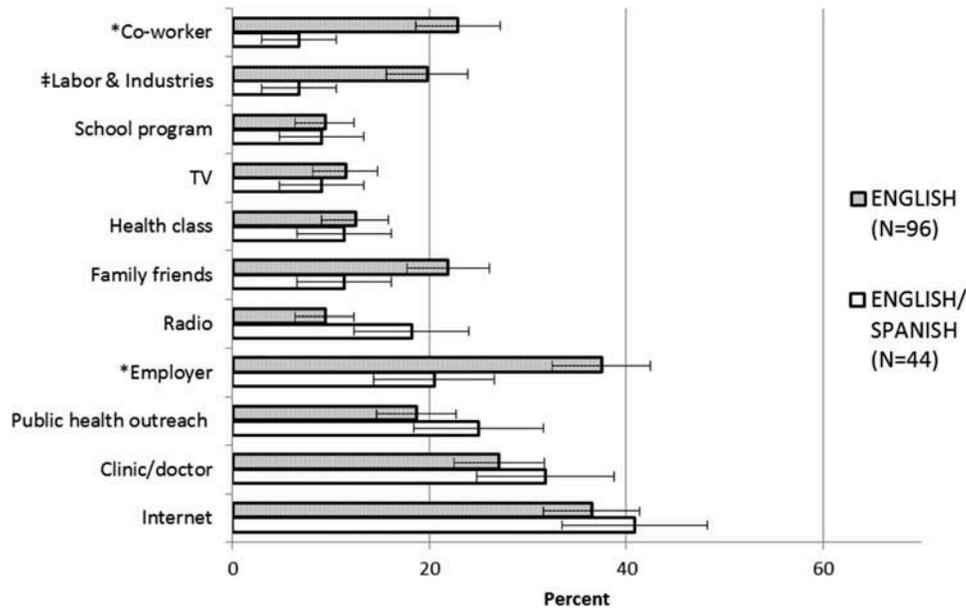


TABLE 5a. Evaluation of the Rapid Clinical Assessment Tool (RCAT)^a (N = 114)

Item		%
RCAT helps to identify agricultural tasks		
Yes	101	88.6
No	9	7.9
DK ^b	4	3.5
RCAT is clear and easy to understand		
Yes	99	86.8
No	9	7.9
DK	6	5.3
RCAT makes it easier to talk with doctor		
Yes	88	77.2
No	15	13.2
DK	11	9.6
Other workers will like to use RCAT		
Yes	85	74.6
No	11	9.6
DK	18	15.8

Note. ^a120 responded that they had worked on a farm or had done agricultural tasks; 114 completed the RCAT questions. ^bDK = Don't know.

14 to 18 years of age with agricultural work experience in a highly productive agricultural region in Washington State with large Latino-American second-generation and immigrant populations. Our data, representing primarily second-generation Latino-American youth, add to the evidence highlighting the lack of workplace health and safety guidance for youth employed in agriculture and provide some insight into opportunities for future education and outreach efforts.

The reported prevalence of lifetime workplace injury or illness in this small convenience sample of youth (6%) is lower than estimates for 12th grade Latino-Americans and 12th grade Yakima County students, who reported working for wages (7.2% and 7.4%, respectively), but higher compared with the State average (4.8%).³³ A 1999 telephone survey in the Yakima Valley, designed to estimate injury rates in the previous year, specifically among young agricultural workers, reported that approximately 3% of respondents indicated that

TABLE 5b. Reported Agricultural Tasks From the Rapid Clinical Assessment Tool^a (*N* = 90)

Task	<i>n</i>	%
Lifting	63	70.0
Harvesting tree fruit	52	57.8
Hand harvesting	44	48.9
Bending	37	41.1
Working outside	33	36.7
Climbing	24	26.7
Hand weeding	22	24.4
Working in wet areas	19	21.1
Pruning	19	21.1
Harvesting field crops	19	21.1
Working with grain or hay	12	13.3
Operating, driving vehicle	12	13.3
Working with large animals	10	11.1
Repairing a fence	10	11.1
Working near water	9	10.0
Milking cows	6	6.7
Working in Isolation	5	5.6
Detasseling corn	5	5.6
Composting	5	5.6
Pesticide application	2	2.2
Manure pits	2	2.2
Transportation	1	1.1
Harvesting tobacco	0	0.0

^aParticipants were asked to check all that apply: 411 responses from 90 youth who completed the RCAT tool.

they had experienced an agricultural workplace injury requiring medical attention.²²

Our workplace injury estimates may not be directly comparable with other work injury estimates. In other studies, the question was framed to consider formal wage employment and not an informal seasonal agricultural job more common among youth in this agricultural region. The denominator of time at risk may be much lower for youth in agriculture. In addition, our injury estimates represent a more acculturated youth. The rate of injury for more acculturated youth may be lower compared with more recent immigrant youth with English as a second language. The immigrant and migratory subpopulation that we were not able to capture in our convenience sample likely face greater health care barriers in seeking medical attention. This may result in fewer self-reports of medical care for these injuries.¹⁰ Overall, young workers may not accurately recall and report work-related injuries, since only 32% of the 140 participants

reported knowing about workplace health insurance and only 15% reported being asked by medical professionals about their work.

Reports on training indicate that agricultural health and safety efforts have narrowly targeted youth working on their family's farms or occur in settings such as 4-H programs or farm safety camps, which are less accessible to hired Latino-American farmworker youth.³⁴ Language and cultural barriers further hinder access to job training for the more vulnerable immigrant subgroups. Although just over half of the respondents in this study reported receiving some type of workplace health and safety training, the nonspecific nature of our question does not assess the availability and effectiveness of agricultural workplace safety training received. The importance of agricultural worker training is critical considering the high percentage of youth who are active in a work environment considered highly dangerous for both adults and children.³⁵ Workplace health and safety trainings need to be adapted to a young Latino-American and immigrant audience, a need that becomes increasingly important as the Latino-American population in the United States grows.⁴

One published intervention study, addressing hired young farmworkers, employed integration of a health and safety curriculum in an existing English as a Second Language (ESL) high school program in Fresno, California.³⁴ For this largely Latino-American immigrant population, the authors found that only 22% of intervention and 15% of comparison group students reported receiving training on agricultural health and safety topics. The Fresno-based study reported that at the time of the baseline, three fourths (74%) of the intervention and 68% of comparison group students reported that their parents had spoken to them about health and safety in the fields. This is similar to the response of our survey participants (67%). Our study results indicate that although family is perceived as an easily accessible source of information, it is not equally considered a reliable source of information regarding occupational health issues. Research points to the valuable role of parent-initiated discussions regarding occupational health and safety issues.³⁶⁻³⁸ Despite the

important cultural role of family and friends, to date no research has explored educational outreach opportunities by engaging parents of young farmworkers.

Although over half of our surveyed youth reported experience with job safety training, their knowledge of basic occupational health concepts, such as restricted duties and access to workers' compensation for injuries, appeared very poor. These results are striking considering the majority of our participants were acculturated US-born youth, and it raises the question about knowledge of workplace health issues among less acculturated recent immigrant and migrant youth. Given the high injury rates in agricultural work, and the elevated risk among adolescent workers, outreach material should emphasize the importance of reporting occupational injuries and the right to receive benefits for medical care and wage replacement if injuries result in loss of work time.

The responses to our survey suggest opportunities for enhanced education and outreach among youth in the Yakima Valley farm working community. Important hazards to address in the study community, based on their relative prevalence as reported on the RCAT, include those associated with the predominant agricultural industry in this region (e.g., tree fruit and berries and other row crops). Key content areas for future education and prevention efforts should also prioritize safe practices in the highest risk activities such as use of tractors and other machinery, lifting, ladder use, and exposure to heat/sun and pesticides.^{39,40} Although increased regulatory protections are not likely to occur in the foreseeable future, voluntary recommendations that limit work activities by youth under 18 to reduce these hazards have been developed.^{41,42}

Our study also highlighted the Internet as a key mode to consider for future occupational health education and injury prevention activities. The survey population reported high access and frequency of Internet use and endorsed the Internet most frequently as a reliable and easily accessed informational source. Although a variety of educational materials have been developed, including Web-based information published by regulatory authorities and health educators, efforts that focus on ensuring

access and usefulness to the target population are needed.^{43–45} Material development should include targeted youth in the design phase and in the development of marketing strategies to enhance the uptake of the materials. The differences in ease of information access and perceptions of information reliability based on acculturation should also be considered when developing outreach material.

Although very few youth reported conversations about work with their clinical providers, a high proportion responded positively to questions regarding the use of the RCAT for this purpose. Future activities to incorporate the RCAT within a clinical setting are merited. The acceptance and impact of the RCAT on the delivery of occupational health guidance by clinicians and ultimately on young worker injury outcomes needs evaluation. Although the project used the RCAT in a printed format, the MCN Web site provides the RCAT as an online resource. Increasingly, clinical service providers use online questionnaires or waiting-room tablet-based materials to gather preclinic information to enhance service delivery at the clinical visit. The RCAT could be easily adapted in a similar practice.

Study Limitations

Our study limitations include the cross-sectional convenience sample nature of our community survey. We successfully recruited participants in a short period of time; however, our recruitment locations may have contributed to a biased selection of more acculturated youth in the region that does not represent other more vulnerable teen farmworkers: namely, undocumented workers, including unaccompanied minors.^{10,17} Additionally, the major recruitment timeframe occurred during a worker shortage and peak harvesting time, which may also have biased our convenience sample. Another limitation was that our initial survey questions about work did not reflect youth's perceptions of work in a region where family farm responsibilities and informal and seasonal work are common. Therefore, there were inconsistencies in response to questions about working for wages versus working on a farm.

CONCLUSION

In summary, this survey of Latino-American youth working in the Yakima Valley agricultural sector illustrates the need to enhance safety information at work, at home, in the community, and in clinical settings. The MCN RCAT tool appears to have the potential for enhancing a discussion of these topics in clinical settings.

Our results suggest areas of future research to enhance outreach efforts. Greater understanding of the opportunities to connect with youth via social media use patterns and an exploration of collaborating with parents to improve and strengthen educational messages to their youth can improve the effectiveness of the dissemination of health and safety information to youth engaged as farmworkers. Because our sample reflects primarily second-generation acculturated youth in a large Latino-American community, future research should assess differences in needs and modes for occupational health and safety education and outreach among US-born versus non-US-born Latino-American youth.

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