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Occupational Risk Among Orchard Workers

A Descriptive Study

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Orchard workers are exposed to an array of occupational health and safety hazards that result in injury, illness, and, in some cases, death. The purpose of this qualitative study was to identify and explore factors that contribute to occupational risks related to orchard work. Twenty-five Hispanic orchard workers were interviewed. They reported that the most common type of accident was falls, usually from a ladder; and the most common injuries were strains and sprains. Three broad categories of factors that contributed to the occurrence of such injuries were Knowledge, Attitudes and Behaviors; Work-Related Factors; and Factors External to Work. **Key words:** *Hispanic farmworkers*, *occupational injury*, *orchard workers*

AGRICULTURE IS ONE of the most dangerous and physically demanding industries in the United States.[1,2] In addition to the obvious physical hazards (ie, tractors, machinery and other equipment), farmworkers are exposed to a multitude of chemical, biological, psychosocial and biomechanical stressors in the course of their workdays. According to the Census of Fatal Occupational Injuries,[3] 39.3 deaths per 100,000 workers occurred among farmers and ranchers in 2003. Nearly half of agricultural fatalities are in crop production. The National Safety Council[4] estimates that 700 farmworkers die from work-related injuries each year; and another 120,000 workers experience disabling occupational injuries.

In addition to the affront from these many hazards, agricultural workers tend to be among the most disenfranchised and marginalized workers in the United States. According to the National Agricultural Workers Survey (NAWS),[5] 81% of farmworkers are foreign born; and 95% of these are from Mexico. For most, Spanish is the primary language. Data suggest that among farmworkers, migrant and seasonal workers are at particularly high risk for work-related injuries.[6,7] The hazards associated with their work coupled with poverty, a sense of powerlessness, and lack of knowledge about their rights as workers have seriously affected the health and well-being of migrant workers.[8]

Although large-scale studies about injuries among orchard workers are sparse, the hazards that exist in this work environment are readily apparent. Workers are required to spend hours in awkward positions as they lift and reach, carry heavy loads, and bend over

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bins with a load of fruit; thus, musculoskeletal disorders, especially to the shoulder and lower back, are a common occurrence.[9] Lifting, reaching, and awkward positions can also result in ladder falls. The exact nature and extent of falls among orchard workers has not been documented; however, recent studies have determined that the majority of ladder-related injuries seen in emergency rooms are occupation-related.[10,11] The most common types of injuries include fractures, contusions, and sprains and strains; however, skull and rib fractures have also been reported. In the Partridge study,[11] 79% of the injuries resulted from excessive reaching or incorrect ladder placement. "Tripod" ladders used in the orchards (Figure 1) require special precautions to prevent accidents from occurring.[12]

It is estimated that Washington State agriculture employs 160,000 to 180,000 workers annually. Agriculture accounts for approximately 20% of Washington States' gross state product. Washington is ranked eighth for overall crop production in the United States; of deciduous tree fruits, it ranks first for production of apples, pears, and sweet cherries.[13] According to the Bureau of Labor Statistics,[14] the fatality rate for the agriculture, forestry, and fishing industry in Washington State was 17.3 per 100,000 workers for the

Figure 1. Ladder used for orchard work.

years 1997 to 1999; between 1998 and 2001, there were 40 agriculture-related deaths in the state. When these fatalities were examined by industry type, it was determined that workers in the deciduous fruit tree industry experienced the largest percentage of deaths (except for the category "other"). The following incidents derived from Washington State's Fatality Assessment and Control Evaluation (FACE) data provide examples of incidents involving deciduous fruit tree workers:[14]

- A tree trimmer pruning a tree came into contact with an electrical line and was electrocuted.
- Worker died of heat stroke while working in the orchard.
- Worker pulling an apple bin with a tractor was crushed by the tractor when it rolled over.
- Worker was shot by coworker while pruning a tree.

AIMS OF THE STUDY

This study represents one component of a 5-year project focusing on hazards and risks associated with orchard work. During the first 3 years of this study, qualitative and quantitative techniques have been used to identify and describe factors that contribute to the occurrence of work-related injuries among these workers. These techniques include telephone interviews with key informants, personal interviews and written surveys with workers, and a review of workers' compensation data. The information derived from this first stage will contribute to the development of targeted interventions that will be tested in the last stages of the study. One aspect of the next stage will be development of devices, or the redesign of existing equipment (ie, ladders), in order to reduce the risk conditions that lead to worker injury. Thus, it is anticipated that the knowledge about workers and conditions in the work environment combined with a modification of work tools will result in creating a safer work environment for orchard workers.

This article describes the results of a qualitative study that consisted of personal interviews conducted among persons working in the orchards. The purpose of this descriptive, exploratory study was to gain an in-depth understanding of workers' personal experiences related to orchard work. The specific aims were to (1) understand their day-to-day work experience; (2) explore and characterize injury episodes and "near misses" that occurred in the course of their work ("near miss" refers to a condition when an injury almost happens but some action prevents it from occurring); (3) describe workers' perceptions about factors that contribute to injury occurrence; and (4) identify perceived barriers to reporting occupational injuries and illnesses.

METHODS

Sample selection and recruitment

Participants were recruited from 2 agricultural communities in central Washington. To be eligible for the study, participants had to be at least 18 years of age, and they had to have worked in the orchards within the previous year (no length of time specified). A variety of methods were used to recruit participants. Invitational flyers were posted in key places throughout the 2 study regions, and return postcards requesting more information about the study were distributed to potential participants. All written materials were available in both English and Spanish. Because it was anticipated that some workers might have literacy problems, personal contact was a critical recruitment method as well. Potential participants were approached by the interviewers and asked if they would be interested in hearing about the study. Persons who expressed an interest were provided with an overview of the study, including the nature of data collection. For the majority of participants, this information was presented verbally; however, participants were also provided with written materials that included the flyer and postcard. If they agreed to participate, arrangements for the interview were made. All participants

were paid $15 cash for their participation. While a record was kept on the disbursement of funds, participants' names and identification numbers were used for record-keeping purposes only. No other personal identifiers were collected from the participants.

Data collection

Data collection consisted of semistructured interviews that were conducted by 2 bilingual, bicultural women who lived in the respective communities that served as sites for the study. The interview guide included open-ended questions that were designed to address the aims of the study. The interviewers were both from farmworker families; one had previous experience as an orchard worker. The principal investigator of the study trained them both for this project.

Prior to the start of the data collection, participants were provided with information about the risks and benefits of the study and their rights as participants, then oral consent was obtained. The semistructured interviews, which took from 30 to 90 minutes to complete, were conducted in the language of the participant's choice, either Spanish or English. Only one participant elected to be interviewed in English. All interviews were conducted in a private location of the participants' choice. In several cases the interviews occurred in the participants' homes. If the participant agreed, the interviews were tape-recorded. Two participants declined to be audiotaped; in these instances, detailed notes were recorded.

Data analysis

Following the interviews, all tape recordings were transcribed; and all Spanish transcriptions and notes from the 2 non–tape-recorded interviews were translated into English. The purpose of the analysis was to identify and characterize themes that were elicited during the interviews. Themes could relate to personal qualities (ie, work experiences), organizational aspects of their work (ie, pace of work), or other contributing factors (ie, weather). Data were entered into a qualitative software program, NUD*IST (Non-numerical Unstructured Data Indexing Searching and Theorizing) version 6,[15] in preparation for an in-depth content analysis. Any word, phrase, or sentence that related to orchard work was considered for inclusion in the analysis. In addition to identifying types of accidents and injuries that occur, selective coding was used to identify the themes that captured the experiences of workers, including their perceptions about workplace hazards. Ultimately, themes with similar characteristics were grouped into a single category. For example, in this study, "relationship with the boss" and "pay and pace of work" were included in a category called Working Conditions. The categories and themes were then arranged into a hierarchy.

Description of sample

A total of 25 orchard workers participated in the interviews, 10 from one agricultural community and fifteen from the other. All the participants identified themselves as Hispanic; all were originally from Mexico. They reported being in the United States from 3 to 41 years (mean 15.1 years). Their ages ranged from 26 to 71 years of age; the mean age was 39.8 years. A small majority (56.0%; $n = 14/25$) were male. Participants were asked to indicate the number of school years they completed. Two participants reported they had no schooling, and 60.0% ($n = 15/25$) reported 4 years or less of school. Four of the remaining participants (16.0%) reported 12 or more years of education. Of those who completed high school, one participant indicated that she completed 3 years of college.

Work experience

Most participants reported that their primary work experiences were in agriculture, although about a quarter of the respondents ($n = 6/25$) stated that they had other types of work experiences. These included such things as retail, clerical, and restaurant work. The type of agriculture work reported

included working in warehouses, fields, and orchards. All had a minimum of 2 years of experience in the orchards. Orchard work included pruning, picking, thinning, spraying, and driving tractors. Two of the participants had experience as foremen, and one owned his own farm.

Types of injuries and "near misses" reported

The most common type of injury event (reported by 56% of all participants) was falling from a ladder. An additional 12% reported a near miss that involved a ladder. Thus a total of 68% of participants reported either an injury event or near miss involving a ladder. The second most common type of injury event was getting poked by branches and other objects. Other types of injury events included falling on slippery ground, getting hit by falling debris, being cut with shears, and tripping over wires or other objects in the orchard (Table 1).

A total of 20 participants (80.0%) indicated that they sustained an injury at some time while working in the orchards. Some of these incurred more than one injury. The nature of these injuries varied, but the most common were sprains and strains and broken bones (Table 2). When asked how an injury occurred, the workers provided detailed descriptions of conditions that contributed to the event. Ladder falls were related to shifting weight of produce, which caused the workers to become unbalanced; slippery steps from rain, snow, or fruit residue; ladder being hit by a tractor; and getting one's feet caught in the rungs of the ladder. Some workers reported "slicing their skin" on the sharp steps of the ladder. Eye injuries often resulted from falling debris or protruding or rebounding branches. Other conditions that were related to injury occurrence are depicted in more detail in the following section.

Table 1. Types of injury events reported by orchard workers ($n = 24$)

Type of injury events	n^*	Percentage of accidents
Fall from a ladder	14	58.33
Poked by branch	3	12.50
Fall on ground	3	12.50
Cut with shears	2	8.33
Hit by object	1	4.17
Hurt when lifting	1	4.17
Total	24	100.00

*Twenty of 25 workers reported at least 1 injury. Some workers reported more than 1 injury.

Table 2. Types of injuries reported by orchard workers ($n = 25$)

Type of injury	n^*	Percentage of accidents
Sprains and strains	8	32.0
Broken bones	5	20.0
Eye injuries	4	16.0
Cuts and abrasions	4	16.0
Contusions	4	16.0
Total	25	100.0

*Twenty of 25 workers reported at least 1 injury. Some workers reported more than 1 injury.

Most of the participants (84.0%) reported having experienced "near misses," and several reported that near misses occurred on a regular basis. Most near misses occurred while the worker was on a ladder. The most common reason reported for an event being a near miss (versus an injury event) was that the worker was able to grab a branch, which then prevented an injury from occurring. Similar to injury events, near misses occurred when workers were on the top rung of the ladder, when they shifted the ladder's position while on it, when weight of produce shifted, or when the workers slipped on a step.

Factors identified as contributing to injury

The analysis of participants' comments about factors that contributed to an injury resulted in a taxonomy of themes that were ultimately categorized into 3 general categories:

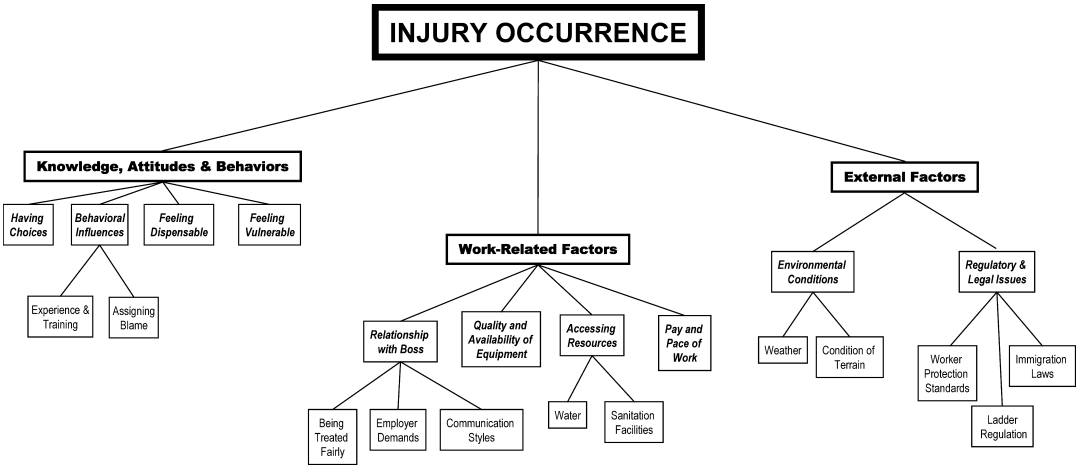

Figure 2. Factors that contribute to occupational injury of orchard workers.

Knowledge, Beliefs, and Attitudes; Working Conditions; and External Factors (Figure 2).

KNOWLEDGE, BELIEFS, AND ATTITUDES

Knowledge, beliefs, and attitudes reflect the workers' perceptions and feelings about orchard work. The comments identified in this category reflect their perceptions of their day-to-day personal experiences as orchard workers.

Limited choices

Overall, workers' comments suggested that they have a deep-seated sense of responsibility to their families and their communities. This strong sense of responsibility coupled with limited education and language skills led to limited occupational choices. Limited choices may result in workers agreeing to work in unsafe conditions. This is illustrated by this worker's comment, "If someone gives you a ladder in bad shape, I believe you have the right to say, 'I will not work if you give me this ladder.' The problem is, if you say something like this, they will answer, 'Go find somewhere else where they will give you a better ladder. This is the only ladder I have. If you like it fine, if you don't, that's your problem.' If the person has been without a job, has children, has to pay rent, electric and water bills, he has no other option than to accept the ladder."

Feeling disrespected

It was not unusual for workers in this study to indicate that they felt disrespected and undervalued by their employers. One worker said, "There are some ranchers that care about us, but many do not. I have heard some of them say, 'If they kill themselves, let them.' I really hate to hear that." Some workers associated these attitudes with their language skills as illustrated by this worker, "If you speak English, people treat you better. If you don't speak English, you are worthless." Others felt disrespect was related to their ethnic origins and their educational levels. Although less frequent, workers also reported positive experiences with their supervisors. One worker described a foreman who was nice to everybody, who made the workers "happy." "If you are happy and comfortable, there are less accidents," she said.

Behavioral influences

Effect of experience and training

Comments about experience and training were mixed. Eleven of the participants indicated they had no training related to proper ladder use or other types of safety training.

The nature of training for those who received it included audio- and videotapes, group lectures, and personal instruction from the foreman. Some workers indicated that workers with less experience were the most likely to be injured, partially as a result of deficient training. A worker who observed that the majority of workers were not trained describes the effect on inexperienced workers: the worker with less experience "is going to have to learn how to take care of themselves, basically, how to set the ladder properly; and its just a 'live and learn' experience." Another stated, "If the new worker does not know how to do things, the risk is higher. There is no training. They want it done like magic." According to one respondent, "Workers train themselves by watching others work, but sometimes they have to work alone and they don't know how to do it. That is why accidents happen among Hispanics."

Even when training occurs, there may be a disconnect between training and reality. For example, one worker stated that the videos "tell you to climb the ladder very slowly, but when you work, you are always rushing." Some workers thought that the training was more directed at teaching people how to use the equipment so they could be more effective at the job, "but they never teach you about the dangers. Most workers know nothing about the hazards of working in the orchards." When training occurs, language is a big issue—sometimes the worker does not speak English and the person doing the training does not speak Spanish.

Assigning blame

In many cases, when an injury occurs the worker blames himself or herslf, is embarrassed, and feels like a failure. There were several comments about worker carelessness. Workers blamed accidents on themselves stating that they "did not place the ladder correctly," or accidents occur when workers are, "not 'focusing' on what [they] are doing." Referring to a lack of attention by some workers, one worker said, "If you don't want to pay attention, well then, that's your problem." Two workers suggested that alcohol and/or drug consumption prior to or even while working may contribute to some workers' risk. The extent of this problem was not specified. However, it will be examined in a survey that will be conducted for the second phase of this study.

Feeling invulnerable

Workers often feel invulnerable, even when they know their actions are unsafe, "I'll be fine. It won't happen to me. You just think, I'm going to move myself without having to waste more time [getting off the ladder] and I can get more work done this way." These feelings of invulnerability may lead workers to take unnecessary risks as exemplified by this worker, "I was like, 'I 'm not going to fall.' So if I needed to reach something, I was going to the top and grab onto the tree and then do what I needed to do and then hope to God I wouldn't fall!" Taking risks may be related to an innate desire to survive as stated by this worker. "[The workers are] just trying to survive, make a living, and they're not going to be thinking about what might happen [if they take risks while working]."

WORK-RELATED FACTORS

Orchard work was described as "hard, strenuous work" and as a job with "obvious risks." Despite these negatives, several workers indicated they enjoyed certain aspects of the work such as working outdoors, the opportunity for exercise, and the fact that it is a source of employment. Nevertheless, comments regarding long hours, low pay, and poor working conditions were commonplace. Work-related factors that workers identified as affecting the quality of their worklife included relationship with the boss, access to resources, the quality and availability of equipment, and the pay and pace of work.

Relationship with "boss"

It should be noted that the term "boss" refers to the person who has immediate

authority over the worker. In this study, workers most frequently referred to the "foreman" as boss; however, in some cases they used the term *owner* or *employer*, or they used the terms interchangeably.

Being treated fairly

Several workers commented on perceived injustices associated with their work. "It is very common for employers to discriminate against us," said one. "I have noticed they don't treat people like humans," said another. An example of this subhuman treatment is illustrated by a worker who described what happened when the boss became angry. "He yelled at us. He was about to hit us. He talked to us like we were his slaves . . . when my husband asked him when he was going to pay us, he said that he would pay us when he felt like it. It took him about ten days to pay us." It is especially unfair, some said, because they were doing work that even the owners were not willing to do. One worker summarized his feelings about injustices by saying, "If the foremen worried . . . more about the workers than the production, then there would be less accidents."

Employer demands

Demands made on workers relate to the amount of fruit picked, the quality of the fruit, and the pace of the work. The pressure to "bring down all of the fruit," even when risk is involved, is described by this worker, "The owner tells you, 'You left a bundle of cherries on the tip of that tree.' This gets you really upset. You have to go all the way up on the platform [top step], beyond the permissible steps just to get the bundle of cherries. This really makes you freak out and you get really mad. You have to risk your life for a bundle of cherries. Imagine going up there to take the cherries down while your body shivers because you are so angry. Your feet and arms are clumsy because of the way you feel. You feel rage, you want to take it out on someone, [but] if you talk back, you'll get fired and that's it. If you don't have a job, there is no food on your plate." This opinion was affirmed by this worker, "They want better and better productivity even when we can't go any further. They sometimes request things that are impossible to do. There was one occasion last year that they did not want more than 5 apples—without a stem—in each box. The fruit was not that good, and I told the foreman, 'you can't even accomplish that.'"

Communication styles

Workers indicated that foremen or supervisors exhibited ineffective—often offensive—communication styles. Foremen were described as having "a negative attitude." One worker stated, "The foreman gets here and starts ordering us around . . . He has no respect. This makes the worker feel frustrated. He or she feels harassed. That is what I call it because you are being harassed, because you are afraid that the foremen might fire you." One worker proposed a solution, "If a foreman has the training to work with us, the people would be happier. It is easier to work with a well-mannered person than work with someone who comes and starts yelling 'hey' at you."

Access to resources

The demands and the pace of the work often interfere with workers' ability to access essential resources such as water and hygiene facilities. "We can't even go to the bathroom." One worker described the foreman as "spying on you, watching every move." They "check how many times you have gone to the restroom and had a drink of water. They take notes on all of these activities." A few workers indicated that water or hygiene facilities, or both, were not available in some of the orchards. "There are places that don't have restrooms. If you say, 'I have to go to the restroom,' they tell you to look for a spot." And another said, "I'm dying of thirst and I cannot keep on working. They say, 'Well, there's no water.'" One worker, describing his frustration with an owner who did not supply water, stated, "There are laws [referring to the OSHA

Field Sanitation Standard that specifies that employers must provide workers with toilet and washing facilities] but we as workers are the only ones who have to obey the laws, not the owners."

Quality and availability of equipment

For the most part, the only equipment supplied by the employer is the ladder. These are in varying stages of disrepair. They may be "missing a hinge" or be "wobbly." "At times they are broken on the top" and "you find some nails and screws sticking out, and some (nails or screws) would be missing. Just imagine how unstable those ladders were." Some ladders were described as being so narrow that they easily move or tilt. Other equipment that is needed for the work include the bags (or sacks), clippers, gloves, goggles, shin guards, and nonskid shoes. Very few ranchers provide any of this equipment. In some ways, the workers thought this was better since when, "you buy your own, you know which ones are the good ones." For example, if clippers are supplied, the employers "don't take the time to check to see if they are good." Oftentimes, "they are in very poor shape."

Pay and pace of work

Workers think they are poorly compensated for their work, and that this has a direct effect on the pace of their work. The pay is low and thus, "you cannot be slow. [One must] move very quickly . . . If you don't produce, they get rid of you." This was confirmed by another who said, "Those people that fall are those that are in a hurry to do their job." When they are in a hurry, "they do not concentrate on doing this job . . . they do not place their ladder firmly" and, "they end up having an accident." The pressure to rush may be accentuated in certain situations as described by this participant, "When workers need money, for example, due to an emergency, they hurry and they don't take care . . . they're just focusing on one thing, making money, getting the job done, and forget safety." One worker reported that he has "been working in the fields for twenty-two years, and they are paying almost the same amount of money since then."

The method of payment can affect the pace of the work. During the harvest, workers are likely to be paid by the piece; thus, the more they pick, the more they earn. "When you work by the hour, it is not like doing piecework, you know; your pace is close to running [when you do piece work]." Because the worker is in such a hurry, said one worker, they may grab "the first ladder and don't take time to check things." If the ladder is in poor repair, it increases their risk for injury.

EXTERNAL FACTORS

Workers described a variety of external factors, that is, factors that are external to the organization of work that affected their ability to stay safe at work. More tangible were the environmental conditions such as the weather and the terrain. They also described legal and regulatory issues that had the potential to affect their safety.

Environmental conditions

Weather

Extreme heat or cold can affect working conditions. Much of orchard work occurs during the summer months. "The heat is unbearable," said one worker. It may reach 100° or more. "People almost dehydrate at times. They supply water in some of the ranches, but most of them don't, and you are not allowed to leave . . . what is the big deal? How much energy do you need to bring us a container filled with water." In the winter, during the thinning and pruning season, the "weather can be bad, you know, and there is a lot of snow; then it freezes and the ladder slips," or, "There is ice on the steps and you have shoes that don't have traction. This is true. These are one of the things that can cause accidents." One worker declared that, "Sometimes we can't even afford to buy shoes, especially those of us who come from there where we are poor. I say this because one year I was freezing my

feet because I was working without [proper] shoes."

Rain is another problem. "Some employers will tell you to stop working when it's raining or it's very hot. Others will try to intimidate you and force you to work in bad conditions." One worker described being "scared" because, "your shoes get wet and they become slick and you could fall real easily . . . The foreman would say, 'you can't stop, you just don't have to work so fast.' And there you are, with the bag dripping and he wouldn't let us stop."

Condition of the terrain

The natural contour and the general maintenance of the terrain were often mentioned as factors that contribute to accidents. In many cases, the terrain is steep, making it difficult to properly place the ladder. If it's wet or cold, the hazard is even greater. The contour may also be affected by animals' digging and burrowing in the ground. The ground becomes soft or has holes, and the third leg of the ladder may sink into the dirt (Figure 1).

Workers described how the terrain becomes muddy and/or slippery from weather or dropped fruit. Sometimes the ground has wet apples on it, you step on these apples and climb the ladder, this makes the steps slippery. One worker described how irrigation systems made "water holes" that can become a hazard, especially for those who are unfamiliar with the orchard. Another problem described by several workers was the tall grass, "Owners and foremen don't maintain [the orchards] properly because they want to save money. This makes it very difficult and dangerous for the workers. If there is a hole or a pit, you can't see it because of the uncut grass." In some cases, the grass "can be up to your waist."

Regulatory and legal issues

Ladder regulations

Some workers indicated that violations of regulations were not unusual in the orchards. As an example, a Washington State regulation prohibits workers from stepping on the top 2 steps of the ladder. One worker, describing his fall from the top step, stated, "No one obeys that rule. I will be honest. It is not obeyed. In none of the cases is it obeyed, because all the pickers have to get all the apples, and no one wants to get yelled at, so they all go to the top of the ladder so they won't lose their jobs. They know the foremen will say, 'They [the apples] don't come down for lazy workers.'"

Worker Protection Standard

The Environmental Protection Agency's Worker Protection Standard is designed to protect workers from adverse effects of pesticide exposure.[16] Although the primary focus of this study was work-related injuries, more than half of the orchard workers offered comments about pesticides as a major concern. As stated by one worker, "There is always residue from the pesticides all around the orchard. Those of us who have worked in the orchard for many years feel the effects. It seems like they attack and weaken your defense system. Sometimes you get nose bleeds." Another stated, "One can get itchy; your hair falls out because of the dust that sticks to the branches." One worker even suggested that a coworker died as a result of exposure to chemicals: "A young man died a month ago. He was killing weeds. He became intoxicated [from the vapors] and was taken to the hospital. The doctor called the company and said that the man was poisoned. He died three days later."

Workers provided several examples of violations of the Worker Protection Standard. As described by one worker, the foreman will, ". . . send people in before the 72 hours have gone by. That is why many people have problems with allergies, [sore] throat, itching, rashes." Another, noting the irony of the human effect of this hazard, stated, "What I have noticed is that they never post any signs to warn the workers of the dangers of these powerful chemicals. They keep the flies and other pests off the trees [but then] later harm people."

Immigration law

Workers' immigration status is also likely to affect their injury experience in the orchard. Immigrants may be documented or undocumented. Documented workers have legal papers or visas that allow them to live and/or work in the United States; undocumented workers do not have these papers or visas. Workers without legal documentation or visas are less likely than workers with documentation to report injuries and to participate in health screening; and they are more willing to tolerate poor working conditions.[8] This finding is affirmed by a worker who stated, "Many people are afraid to speak up because they are undocumented, they think they are less likely to get any benefits. There are less benefits if you are undocumented. Many people think, 'This is the way it is.' They think they don't have any rights because they are not legal residents."

RESPONDING TO INJURY

When an injury occurs, workers often do not report it; and even if they do report it, they may not get compensated. One worker, explaining why he did not report an injury to the Department of Labor and Industries, stated (as if speaking for all workers), "We don't speak up about things, or we pretend things are okay so we don't get in trouble with the foreman. I mean, we are given a place to live and all that. One believes that they are doing us a favor, I mean, one does not want to get in trouble or to be asked to leave the place, so we sometimes keep things to ourselves." Another affirmed this opinion saying, "You know how the company is, they will get mad [if we report an injury to Labor and Industries]—or sometimes you get fired." As an example, this worker described a situation she observed when a co-worker sustained an injury to her hand, "My friend showed [the foreman] her hand. At this time, it was very swollen. She asked for a form to file a claim. The owner said no, that she should cure herself. The employer told her it was her own fault. A tendon in her hand was injured!" She concluded with, "She had to pay for her own medical expenses. They are not concerned about what happens to the workers in the field."

Other issues were raised related to concerns about *being believed*. ("If no one sees you, they don't believe you" and "Out of shame, one doesn't even go get it looked at") and *delayed symptoms*. ("Sometimes one can get hurt badly but it's not until the next day that it starts to hurt." And another, "If it doesn't hurt till the next day, they say, well you didn't fall here. They will suggest you were injured at home or in another orchard.") Misunderstandings and misinformation also affects workers' actions following an injury. One worker mistakenly said, "... only those who are in the country legally can do that [file a claim], and I am not one of those. The people that are not here legally can't claim unemployment or any other benefits most people claim."

DISCUSSION

The findings from this study provide a poignant and troubling glimpse into the day-to-day lives of Hispanic orchard workers. The candid responses of the participants reveal that, for the most part, they are aware that risks are associated with their work. However, for the reasons stated, they have limited ability to avoid occupational injuries and illnesses. As in many workplaces, the comments suggest that the major focus in this work environment is on productivity. The worker's goals are to survive and to provide the necessities of life for his or her family. The employer's goal is to fill the bins with high-quality fruit. Sadly, according to these workers, health and safety is but an incidental concern of some employers.

To be able to fully appreciate why workplace injuries occur, it is essential to understand the nature of work and the context of the work environment. It is simplistic to associate injuries only with one or another factor, and to ignore the complexity of the injury occurrence. For example, some might argue that in the orchards, ladders are the culprit. That is, the most frequent and the most serious

injuries are a result of ladder falls. Thus, if we regulate ladder activity, or if we better maintain ladders, that will solve the problem. The findings from this study clearly demonstrate the inadequacy of this approach. Although it is true that falls from ladders appears to be the most serious concern, workers describe a multitude of factors that contribute to the occurrence of such falls.

While several comments suggest that workers feel personally responsible when an injury occurs, it was very evident that many workers associate injury occurrence with organizational and environmental conditions. Of greatest concern are the descriptions of the worker's relationship with his or her "boss" or foreman. Workers describe a strong sense of helplessness and frustration in dealing with bosses who do not respect them. Despite this treatment, workers take pride in their work. One worker aptly described himself as a professional: "I believe that we are all professionals in a certain way. I say this because I am a person who picks fruits; I am a professional and I must behave like one." The quality of work in the orchards would be enhanced, he stated, if "both parties [foreman and worker] show respect." This would result in "a certain harmony between the foreman and the worker." When workers are not treated fairly, when they are asked to do more than is reasonable, and when they are made to feel that they lack implicit value, it is inevitable that they will feel powerless to change their situation. If dangerous conditions exist, they either have to accept the risk of injury or risk losing their jobs.

Workers' comments about barriers to reporting occupational injuries are particularly disturbing. With this in mind, the rate of injuries reported in this very small survey conducted under strict confidentiality is troubling. In this sample of 20 workers who indicated that they had sustained an injury, only 12 reported some type of medical treatment, and just 9 of these filed for workers' compensation. Of these 9, 5 (55.5%) indicated they received some level of compensation. The fact that workers fear reporting an injury is another form of oppression. Workers also expressed concern about "getting the boss in trouble" if they reported an injury. Most likely the "trouble" would be an increase in the employer's workers' compensation rates. Thus, it appears that in these cases, workers place more value on the employers' financial repercussions than they place on their personal health and well-being. And, very importantly, because of workers' fear to report, the extent of injuries in this industry are unknown.

STRENGTHS AND LIMITATIONS

The primary purpose of this study was to identify and describe the full range of factors that contribute to the occurrence of injuries in a sample of orchard workers. The data collection processes included extensive training of interviewers and regular review and discussion of findings; data analyses consisted of selective and comparative coding techniques. On the basis of the review and discussions, the interviewers and the principal investigator concluded that the comments captured the majority of issues and concerns that prevail within this working population. A major strength of this study is that these in-depth, open-ended exploratory interviews effectively describe these issues in the words of those who are most likely to know, the workers themselves. Nevertheless, the fact that this was a select and relatively small sample from a specific region of the country limits the findings' generalizability to all populations of orchard workers.

SUMMARY AND CONCLUSIONS

It is clear from these workers' comments that a multitude of factors increase a worker's risk for injury and that accidents in the orchards cannot be attributed to any single cause. Several of these factors readily lend themselves to interventions. These include such things as assuring that workers receive appropriate safety training, making sure that equipment is in good condition, providing

workers with periodic rest breaks, maintaining a safe terrain, and developing strategies to assure compliance with regulations. These are the obvious ones. Other factors, which may in fact be more serious, are more challenging to address. Of most importance is the relationship with the boss (ie, foremen and other supervisors), specifically how the worker is treated. In fact, this single factor may be directly related to all other factors. If it is true that the foremen or owners do not respect the workers, that they harass and cajole them with threats and intimidation, then it is easy to see how deficiencies in these other areas would occur. It can be speculated that problems with the "boss" may in fact be traced to the owners and ranchers. If the owners and ranchers are putting pressure on foremen or bosses to produce without consideration of the workers' safety, these supervisors may adapt similar attitudes when dealing with workers on a day-to-day basis. While this was not examined in this study, this aspect of relationships at work deserves further examination.

Interventions targeting work-related factors need to be developed. Clearly, worksites and equipment need to be engineered to maximize the safety of these workers. But, more important, supervisors such as foremen and owners must be responsive to the health and safety needs of the workers. Other interventions include the design and implementation of health and safety training programs that consider the unique needs of the workers. To be successful, programs must empower workers to speak out on their own behalf so they can articulate their concerns about their safety. However, this is not likely to occur if workers fear the loss of their job and/or adverse reactions from their supervisors. Workers must become more aware of their rights as workers. For example, in Washington State, all workers are entitled to workers' compensation when injured on the job, regardless of their immigrant status (documented or undocumented). Strategies to inform workers about this legal right and to empower them to act on it must be developed.

Although numerous factors affecting the occurrence of work-related injuries were identified in this study, the full contribution of these factors needs further exploration. The next phase of this study, which consists of a detailed survey, is intended to quantify and prioritize the factors that workers identified in this study. It is anticipated that this next phase will provide more detailed information about injuries that will lead to more targeted interventions for preventing injuries and illnesses in this population. For example, is it true, as these workers suspect, that workers with less experience are the most likely to be injured? In view of the conditions described, it is not surprising that some workers may use alcohol or drugs as a way of coping. How prevalent are these conditions; and how often do they lead to injury occurrence? To what extent do organizational factors contribute to the health and safety of these workers? Additional studies are needed to examine the extent, the nature, and the effectiveness of safety training and to determine the level of compliance with regulations. Clearly, there is a compelling need to answer these and many other questions and to develop and test strategies that will be effective in protecting the health and safety of these workers.

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