AMERICAN JOURNAL OF INDUSTRIAL MEDICINE 59:227–235 (2016)

Immigrant Dairy Workers' Perceptions of Health and Safety on the Farm in America's Heartland

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Background *Dairy farming is dangerous. Yearly, farms grow fewer and larger by employing immigrant workers, who have limited industrial agriculture experience and safety and health training.*
Methods *We examined results of five focus groups with 37 Hispanic, immigrant dairy workers. Analysis followed a grounded theory approach and employed ATLAS.ti.*
Results *Reported injury experience affirmed the hazardous nature of dairy. Some workers received appropriate worker compensation benefits, whereas others were instructed to deny work-relatedness. Some employers covered medical injury costs out-of-pocket, whereas others did not. Cows were a major injury source. Pressure to work and weather were noted as injury risk factors. Worker compensation was poorly understood, and immigration status and fear of deportation influenced injury and hazard reporting.*
Conclusion *Injury management practices range from benevolent to threatening. Workers compensation is poorly understood and undocumented status is an occupational hazard. We underscore the need for further research and immigration policy change.* Am. J. Ind. Med. 59:227–235, 2016.

KEY WORDS: farm worker; occupational health and safety; injuries; workers compensation; immigrant

INTRODUCTION

Large animal agriculture, among the most dangerous activities in one of the most hazardous industries in the United States, puts workers in close and frequent contact with large farm animals often weighing many times the weight of a human. Injuries caused from milking and handling cows have been shown to be common in several studies, and often these injuries are serious, resulting in work restrictions for the injured worker [Pratt et al., 1992; Hard et al., 2002; Skjolaas et al., 2005; Erkal et al., 2008; Douphrate et al., 2009a,b]. Machinery of various sorts, a ubiquitous presence in the modern agricultural system, presents another important hazard that adds significantly to the high injury and death rate in agricultural and dairy work [Gerberich et al., 1998]. Finally, illness caused by exposure to organic and inorganic dusts, chemicals, and zoonotic pathogens represents another important category of health issues for workers in agriculture, one which is very understudied in dairy [Emanuel et al., 1964; May et al., 1986; Linaker and Smedley, 2002; Greskevitch et al., 2007].

National data on dairy injuries are not readily available, but data based on worker compensation claims in Colorado have shown that dairy workers have the second highest rates of injury-related worker compensation claims among agricultural professions covered (8.6/200,000 work hours), second only to cattle dealers [Douphrate et al., 2006]. Translated to full time equivalent (FTE), these equate to

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Accepted 23 September 2015
DOI 10.1002/ajim.22538. Published online 2 November 2015 in Wiley Online Library (wileyonlinelibrary.com).

approximately 8.6 injuries per 100 FTEs. Unlike Colorado, where all employees are covered, in Wisconsin, not all agricultural workers benefit from worker compensation due to an existing exception for small agricultural settings, employing fewer than six workers [Bureau of Insurance Programs, 2003]. However, for those who are covered, data suggest that work-related health events sustained by workers are serious, as they generate among the top 10 highest costs per claim in the state [Wisconsin State Laboratory of Hygiene, 2008].

The Wisconsin dairy industry is changing. While the number of dairy farms in Wisconsin has steadily declined since the 1950s, milk production has continued to increase [National Agricultural Statistics Service, 2015]. The average herd size per farm has more than doubled from 51 cows in 1990 to 111 cows in 2012 [National Agricultural Statistics Service, 2013]. In addition, milk production per cow increased by 53% during the same time period from less than 14,000 pounds to over 21,000 pounds per cow [National Agricultural Statistics Service, 2015]. The number of large-sized operations (herd sizes of over 1,000 cows) has also tripled within the last decade [National Agricultural Statistics Service, 2015]. This industrialization of the dairy trade has resulted in an increased demand for hired workers on the farm.

Immigrant workers, largely from Mexico, make up of half of the US dairy workforce. A survey of US dairy farms showed that approximately 62% the milk in the United States is produced via immigrant labor [Rosson et al., 2009]. Like the US economy in general, Hispanic immigrant workers now play an important role in Wisconsin's dairy industry. Harrison et al. conservatively estimate that Hispanic workers constitute over 40% of all hired dairy employees, approximately 5,316 individuals in Wisconsin. Their 2008 study suggests the vast majority of the immigrant dairy workers (88.5%) are from Mexico [Harrison et al., 2009a]. An estimated 50% of Mexican immigrants are not legally authorized to work in the United States [Passel et al., 2014; Zong and Batalova, 2014]. Wisconsin dairy workers are largely young males with limited formal education, do not speak English, and receive limited job training [Dyk 2007; Harrison et al., 2009c].

Wisconsin's immigrant dairy workers spend an average of 57 hr per week on the job and make approximately $10 per hour [Harrison et al., 2009b]. Over 60% of immigrant dairy workers reported they are milkers (workers who milk the cows) or pushers (workers who help corral the cows into the milking parlor). In contrast, only 16% of native US workers report this as their primary task. Milkers and pushers are relatively routine jobs, with less decision-making than other farm tasks. There are also important differences in the shifts that immigrant workers cover, as they comprise 80% or more of workers covering second, third, and split/rotating shifts [Harrison et al., 2009b].

As part of a formative research process to inform three projects supported within the Upper Midwest Agricultural Health Center, investigators facilitated five focus groups that sought to qualitatively describe the knowledge, attitudes, and practices of immigrant dairy workers related to occupational health and safety in dairies. The three projects include: (1) development of a computer application aimed at facilitating return of injured workers to safe light duty on the farm; (2) application of a recurring questionnaire for surveillance of injuries in dairy; and (3) testing the efficacy of a culturally appropriate popular education methodology for a dairy health and safety intervention. During these sessions, data were also collected on the feasibility of using an electronic audience response system (ARS). Three groups of questions were used for the ARS analysis, which is the subject of another publication [Keifer et al., 2014]. This paper focuses on qualitative analysis to support the popular education intervention. The themes examined include worker injury experiences (including how these injuries were managed), workers' compensation, worker perception of hazards, and hazard abatement. Other themes, including prevention and health and safety training, will be discussed in another manuscript.

METHODS

We collected data from immigrant Hispanic dairy workers in Wisconsin through five focus groups ($N = 37$). A focus group interview guide was developed based on questions addressing information needs of each of the three projects. The questions were designed to elicit responses and discussion regarding worker understanding, perceptions, and practices related to hazards and ways to control hazards; farm policies and procedures related to worker safety; and organization of work and workers compensation. Questions also addressed worker experiences regarding injuries and illnesses, safety training practices on farms and training preferences.

Recruitment

Recruitment methods have been thoroughly described in a previous publication [Keifer et al., 2014]. The project team was assisted by individuals with direct connections to the local Hispanic community. These included the owner of a Mexican restaurant and money transfer location, an interpreter for dairies, and an owner of a large dairy farm. Workers were recruited from two geographical regions of Wisconsin. One focus group was conducted on the farm where the participants were employed, and recruitment was assisted by the farm owner. The other focus groups took place off the farm. Two focus groups consisted of workers recruited directly from the community as opposed to via their

connection to a particular farm. The two final focus groups were conducted off the farm, but workers were recruited via linkages with an interpreter for the farm where they were employed. Each focus group participant received a $20.00 gift card. All sessions were conducted in Spanish, and refreshments were provided. Focus groups occurred during the summer of 2012. Table I details the sites and specific recruiter of the five focus groups.

Data Collection

Three project staff moderated all the focus groups in Spanish. These individuals were trained in focus group methods and were fully bilingual. Data were collected using a combination of methods. Basic demographic information was collected using an electronic ARS (Turning Point Technologies). We also verbally collected ranges of some numeric responses, allowing us to gather general estimates of the demographic variables as back up to ARS collection, as this was being tested for usability during the same sessions [Keifer et al., 2014]. All focus groups, except one, were audio recorded. Recruitment for one of the focus groups resulted in too many participants for effective data collection so the facilitators split the groups in two. Because this was not planned, facilitators did not have enough audio equipment readily available and were only able to record one of the groups. The one focus group that was not audio recorded was documented via note taking by two bilingual facilitators. These notes, taken in Spanish, were later merged into a single document. All audio recordings were transcribed in Spanish. A professional translator translated all notes and transcriptions to English. The transcripts were reviewed by the focus group facilitators to confirm accuracy.

Analysis

After each focus group, the moderators and investigators met and discussed immediate impressions resulting from the content of the responses and noted key areas for further exploration and analysis. Demographic data collected using the ARS were supplemented with those from the notes and transcripts and transferred to a Microsoft Office Excel spreadsheet for summary and descriptive analysis.

We utilized ATLAS.ti Version 7 software to analyze the focus group transcripts. Transcripts were coded by four members of the project team. Two bilingual team members independently coded the five pre-translation Spanish transcripts, whereas another two coded the five English-translated transcripts. Initially, open coding generated 197 codes. Through iterative discussion and review, a total of 64 codes were ultimately used as part of the analysis. Codes found to be responsive to the focus group guide questions were classified into a family of "solicited" codes. Several codes related to themes that were not directly queried emerged during the discussions prompted by the interview guide were classified into a family of "emergent" codes. Codes were also analyzed for co-occurrence and groundedness to discover underlying themes that were pervasive and beyond those that were solicited by the focus group guide [Bradley et al., 2007].

RESULTS

Demographics

A total of 23 men and 14 women participated in the five focus groups. All participants but one were from Mexico. The highest percentage of participants reported Veracruz as their home state (40.5%) The remainder was from various other states in Mexico such as Guanajuato and Zacatecas. Two workers did not identify a home state, and one was from Guatemala. A majority (54.1%) reported no farm/agricultural employment experience before arrival in the United States, although almost two-thirds (62.2%) reported previous experience of working with large animals. For their current jobs in dairy, most participants reported being milkers (64.9%), whereas 16.2% reported being pushers, and 10.8% reported being feeders. Three did not provide job data. As observed in our previous report, accuracy of responses to open-ended numerical questions using an ARS appeared unreliable. As a result, we have incomplete data on age, years

TABLE I. Summary of Focus Groups

Focus group #	Location	Male	Female	Recruiter	Wisconsin region
1	Restaurant	0	3	Restaurant owner	Central
2	Restaurant	5	1	Restaurant owner	Central
3	Farm	8	2	Farmer/supervisor	Central
4	Church	10	0	Local interpreter	Western
5	Church	0	8	Local interpreter	Western
	Total	23	14		

in the United States, years of school completed, and years working in dairy [Keifer et al., 2014]. Number of years in the United States and number years working in dairy ranged between 1 and 25 years. Women had fewer years in the United States and working in dairy. Education levels ranged from none to about 12 years.

Injury Experience

Participants were asked to describe their personal experience with dairy-related injuries or the experience of someone they knew or heard about. Consistent with what is known about the high injury rate in dairy, virtually every participant had themselves suffered an injury or reported either knowing or hearing about someone who had suffered an injury on the farm. Injuries described included overuse syndromes, fractures and compound fractures, amputations, crush injuries, lacerations, contusions, sprains, eye injuries, dental injuries, and head injuries. Physical consequences of injury varied from death reportedly due to animal crush injuries, equipment-related crush injuries, and two manure lagoon drownings to monocular blindness, chronic pain, and temporary, long-term as well as permanent disabilities. The social consequences of injury varied from dismissal as reported in several cases (a consequence not unknown to many industries), loss of income, loss of housing, to having to return to their native countries.

Injury Management and Workers' Compensation

Workers were asked several questions regarding how injuries were handled. Several workers reported receiving what appeared to be workers' compensation benefits; however, they did not clearly understand it as such, and ascribed the payments for care and time loss as being provided by the farmers. For instance, one worker said, "On the farm where we work, there they have it, but unfortunately only when we have an accident." Others reported having worker compensation, but mentioned they were told not to indicate the injury occurred at work, so as to avoid initiating a worker compensation claim. One participant stated, "They tell us you can't say it occurred at work. And careful if you say it happened at work because you'll lose your job. It's blackmail."

Another participant said, "This happened last week on my farm. Wednesday, the young man was driving the skid steer and the big bales of hay. He was stacking up by fours. He was putting the last one up, and it fell back on the skid steer, and broke the glass and busted all the windows and glass got in his face and in his eye. And the doctor said you have to go to the owner. He [the owner] was good, but they took him . . .to an eye specialist and when they arrived they told the worker to say it happened at home. 'You're not going to say it happened at work. We will pay the medical costs but don't say that it happened at work.' The bad thing here is that if there are consequences for his eye, and now he can't do anything because he said it happened at home."

Multiple participants paid their own medical bills when injured at work. One participant said, "I suffered a fall, I slipped on the farm. I went and told the owner, and they gave me two days, waiting for MRI results. I had a compressed vertebra, so they gave me a month and a half. . .they [the farm] gave me two days and then I had to return to work, otherwise they would fire me. They didn't pay me, and the MRI was $9,500. This is the sad reality, we are afraid to speak, but it is true that this is what's happening to us." Another stated, "They gave me therapy, but I needed more tests, and they [the farm] didn't want to pay, they didn't have insurance to pay those studies that were expensive."

Some reported that the farmers were in fact more generous than workers' compensation insurance, in which partial payment of wages usually begins on the fourth day of missed work. "On my first farm, [I had] great bosses. . .Let's say if you hurt yourself, they'd say take two or three days off and you'll get half your pay." One worker described suffering from a severed finger while at work. The farm owner transported her to the hospital and covered wages and medical costs for 45 days while she recovered.

Several participants reported less than beneficent treatment in the case of injuries on the farm. One participant said, "I was on farm, the cow kicked me. Now I have this little bone break. The boss didn't want to pay me even a day." When asked if she told the boss, she said yes. While she pointed to the multiple places her hand had been injured, she continued, "I even went to the doctor and everything. They gave me 6 weeks off work to get better. They gave me a splint to put here and here. And that is where it is broken. . ." She went on to say, "The boss didn't pay me . . .I had to go back to work early because I needed to work. Because that's the person [boss] who rented me a house and also I had bills. So if one leaves the job, they take the house from you and so I went back to work before time. And yes, the boss didn't want to pay me any of the days that I was not working." Another related, "There are times when the bosses don't pay you the days [missed]. . .Maybe they give us one or two days off to rest. But if it is more they will fire you."

Worker Understanding of Workers' Compensation

A distinct insurance system that functions like workers' compensation does not exist in Mexico. Instead, general and work-related medical care, time loss, and disability are covered under the Mexican Social Security system, which provides health care to all formally employed workers and

their families and work-related issues to workers [Gomez Dantes et al., 2011]. Workers' compensation insurance in the United States is important, as it is potentially the only assistance offered for workers to access health care for injuries that occur at work.

We found two primary issues regarding workers' compensation. First, respondents knew little or nothing about workers' compensation. Only a few participants understood workers' compensation, and a couple participants understood very thoroughly. Most did not know what it was, and many did not even know it existed. When asked specifically to define "worker compensation," several participants said it was a bonus, overtime, or some kind of payment or compensation. One participant said, "The bonus they give us or what?" Another participant said "I understand it as a compensation or a bonus for the good work that one does." This interpretation is understandable, given that the literal translation of "workers" compensation' in Spanish does mean pay: *Compensación para trabajadores* (payment to workers).

Secondly, there was confusion between health insurance and workers' compensation. One participant said, "We really don't know. We don't have it. On the farm where we work, there they have it, but unfortunately, only when we have an accident." Some of the participants reported receiving health insurance through their farms.

Injury Reporting

In Wisconsin, a worker compensation claim can only be initiated by an employer. When participants were asked if they reported injures to their employers, we found only a minority of workers reported doing so. A substantial majority of participants expressed a fear of job loss as a reason for not reporting an injury to their supervisors. One participant stated that if she reports ". . .that boss is going to fire me, and I need the work."

Another participant stated, "Reporting it [injury] causes other problems. Sometimes one thinks, I might lose my job. Or if there is an accident one doesn't report it because of the same fear." Another reported, "Because they can fire you from your job just for reporting it." Another stated, "the boss will be upset and send us packing, and he might be bothered with a few choice words."

Others mentioned fear of deportation if they reported an injury. One worker stated, "Sometimes the boss, when there are many accidents, so as to not pay them, what he does because you are an illegal is they threaten you with calling immigration." Another said, "We do not [report] because they will threaten you with immigration. . .It's not that he threatens; it's that we have seen it done. Honestly, we are scared. That's why many illegals like us would rather keep quiet and figure it out however we can."

Among those who may have been motivated to report injuries due to wanting a hazard abated, many expressed a feeling of futility because hazards were not addressed in many cases after an injury occurred. One respondent talked about frustration with not being believed. "You go and tell your boss that you had an accident. And by the time your boss comes and pays attention and says 'let's go to the hospital,' you choose instead to just go on your own, and figure it out on your own. By the time the boss finally pays attention, you're dying. Because you have to show where it happened. . .Listen brother, if I told you that I'm bleeding out, when am I going to find the time to show you that?" Another worker pointed out that when he reported to his employer about a co-worker who hit his head on an exposed nail, the employer just "laughed."

Worker Perceived Hazards and Risks

Participants were asked to describe hazards they perceived to exist on the farms. Many reported that animals in general were potentially hazardous. One participant said, "because the first time it was the cow that landed on me. There was snow and the snow served as a cushion, so it didn't do anything to me. But this time, it was inside the pen and my ribs were pressed against a tube. . .I fell down. It was painful; I had to go to the hospital. . ."

A great deal of focus was placed on the risks posed by "fresh cows" and "new cows" (i.e., cows that have recently given birth and cows that have given birth for the first time, respectively). The workers identified these animals as particularly unpredictable and hazardous. Participants reported numerous injuries attributable to new or fresh cows. One participant stated, "sometimes there are heifers that are new, one has to fight with them to get them in, and these same cows can hit you or run over you or push you." Another reported, "well, in my case, sometimes come fresh cows, they are recently calved, their udders hurt and all that, and at the moment where you want to put the milkers on them, the cow kicked, and that is when she got me on the finger." The heifers are the worst (primiparous cows, having given birth for the first time). They are hard to milk, and difficult to get into the parlor. "They are the most aggressive even though they are new and smaller, they kick when you put the milkers on. They kick you all over."

Bulls also are especially recognized as potential hazards. One participant said, "They [the cows] are little animals, but they have a way of sometimes of turning on you and getting mad, and even more when the cows have the bull around. The bull is really bad, very ugly for the person who pushes cows. He [the bull] gets jealous. I say this from my own experience."

Participants in every focus group mentioned pressure to work fast as a factor increasing the risk of injuries on the

farm. One participant said, "They [owner/supervisor] pressure you. That is when accidents happen." Another stated, "Sometimes it is from going too fast, you do something carelessly. For example, on the steps because you have to go fast, because they [the owner/supervisor] only give you so many hours [in a shift] you aren't getting the work done, they are yelling at you, you have to run more when you are milking."

Participants noted in several instances that weather interacted with hazards on the farm to increase the risks for injury. For example, gates used to control the movement of animals were singled out by several workers as presenting a hazard particularly during freezing weather. "In winter. . .the gate freezes and the floor freezes and one goes up there and falls on top of the cows and then gets up."

Participants also pointed out the difference in size and levels of industrialization in dairy production between the United States and Mexico as presenting previously unencountered risks. "The system is very different from Mexico and there is the problem. . .As a kid, I'd walk the cows sometimes, but there you milk by hand. And here you don't clean with a shovel, only with a skid steer, or a big, big tractor and the equipment. It is also very different milking 10 cows than 1,800 cows."

Lack of knowledge and communication were also mentioned as increasing a workers risk for injury. One worker reported that "sometimes for example a new person who doesn't know anything. . .. Just goes and goes and goes and doesn't know. And that's when accidents happen." Another person said, "there is no '*compañerismo*' (companionship)." Lastly, another participant stated, "because they [farmer/supervisor] always tell you how to deal with cows but never speak about the risks."

Other hazards that participants mentioned included slippery floors, manure pits, and chemicals. They also described their individual behavior as increasing risk of injury. They noted that carelessness, distractions, working too fast, and fatigue increased their risks.

Hazard Abatement

Participants were asked about their workplace response to the injuries on the farm. Some participants reported they were told to be "more careful" at tasks and personal protective equipment being issued only after a chemical exposure had happened.

Responses by employers to worker reported hazards or hazards identified by actual injuries were variable. Some participants reported abatement of identified hazards. One worker stated, "There are improvements made on the farm so that it doesn't happen again." When asked how often these improvements are made, the participant said, "It's not always done."

However, a majority of participants reported slow or no response to identified hazards. One participant stated, "we have to report it once, twice, three times for them [farm owner/supervisor] to do something because sometimes they just don't do it." In this particular case the participant also noted that it was important to talk to the farmer as a group to bring about abatement. Several participants agreed with a statement made by one participant about a snag hazard on the farm. "All of us had to speak up so that they would remove it, because if not they were not going to remove it." When asked whether there were changes to avoid future injuries, another respondent said, "no, everything stays the same."

DISCUSSION

The focus groups findings provide first-hand insight into some of the health and safety concerns for Hispanic immigrant workers employed in the Wisconsin dairy industry. In general, the injuries described confirm the findings in the literature. However, the experience of immigrant dairy workers surrounding reporting and management of these injuries is not well documented elsewhere. The coded statements were grouped into themes and concepts to describe the prevalent workers' perceptions about injuries and hazard management on dairy farms [Bradley et al., 2007]. The main themes examined in this study were injuries, hazards and risks, and hazard abatement.

The workers in our focus groups described various scenarios when injured. First, there seemed to be a great confusion about workers' compensation. Workers did not necessarily understand whether they had access to workers' compensation, or they were confused about the differences between workers' compensation and health care insurance. We noted that the term and how it is translated is likely to add to the confusion surrounding workers' compensation. Second, workers discussed how in many circumstances they were specifically told not to inform health care providers that the injury incident happened at work. Third, workers expressed fears about reporting injuries to their supervisors or to health care providers, because they worried about losing their job and feared being deported. These frontline immigrant workers highlight important considerations for health and safety regarding immigration status. While not directly solicited, immigration status and lack of work authorization emerged as a consistent theme impacting worker health and safety. It is not known how many immigrant dairy workers are legally authorized to work in the United States. However, data regarding all Mexican immigrants in the United States suggests that an estimated 50% are unauthorized to work [Passel et al., 2014; Zong and Batalova, 2014]. Data regarding immigrants in crop agriculture conservatively suggest that approximately half of foreign born workers are not legally authorized to work in

agriculture [Carroll et al., 2005]. Given that immigrant workers in dairy are ineligible for temporary agricultural visas (H2-A) [United States Department of Labor, 1952], it is likely the percent of unauthorized workers in dairy is greater than 50%. Focus group participants talked about immigration status as a reason not to report injuries. They stated fears that immigration authorities would be contacted if they reported injuries, and they would be deported. These findings reflect results from a recent study of immigrant workers showing that a lack of authorization to work is an occupational hazard as it impacts workers' reporting of injuries and hazards [Flynn et al., 2015]. Lastly, in some cases, workers described benevolence on the part of their employers who paid them for time lost and took care of their medical expenses.

All together, the description of injury experiences among the workers in our focus groups underscores a critical breakdown in potential sources of surveillance data to help us understand the broader extent and nature of injuries among immigrant workers in dairy. Our findings suggest that workers' compensation claims and OSHA 300 logs, in which employers must document certain injures, offer only a limited picture of the situation. This lost information is a missed opportunity, as it reduces our ability to understand health and safety concerns in dairy, offer hazard remediation strategies, and improve safety. Worker compensation insurance carriers, who have great potential to help producers improve safety practices, are limited in their ability to influence safety if claims are not filed when workers are injured.

More importantly, while some workers suggest their employers do indeed cover their medical expenses related to injury, other workers noted that the burden of injury falls on the worker. Even when employers cover workers immediate care for injury management, workers are not likely to have long-term coverage should they need future medical care. The consequences for the worker and his or her family are potentially grave. Further exploration is needed to understand what happens to the injured worker in long term.

It is critical to highlight that workers clearly believed their immigration status made them more vulnerable, putting them at further risk in the workplace. Immigration status is often noted when discussing occupational health and safety, but it is rarely classified as an occupational hazard. We did not set out to specifically investigate immigration status as a hazard; in fact, we avoided specifically asking about documentation status. However, workers from focus groups conducted off the farm brought this issue to the health and safety discussion. It underscores the need for broader immigration reform as an important factor in addressing health and safety in dairy.

In addition to barriers regarding reporting, some workers discussed the need to go back to work before their injury healed, because they feared losing their jobs or felt they could not survive without the income. This, too, has significant health and safety consequences for the worker.

Regarding hazard perception, the focus group findings highlight important considerations. First, the immigrant workers in dairy have limited formal employment in agricultural and are unfamiliar with large industrialized agricultural settings. This, along with their injury experiences, reinforces the need for health and safety training to ensure that workers, particularly newly hired workers, are immediately trained. Second, workers in our focus group highlighted key safety concerns in working with large animals. The workers noted with frequency the challenges associated with new cows (those who have just given birth for the first time) or fresh cows (any cow that recently gave birth), often referring to them as angry or mad cows. On many dairies, fresh and new cows are clearly marked to alert workers. However, many of the workers in our focus groups pointed out that this practice was not necessarily the norm. The workers also pointed out that they were given few strategies regarding the management of large animals. Lastly, workers discussed the pressure to work fast as a hazard.

Our focus groups findings suggest that reporting of injuries or hazards can result in improved safety practices on the farm. However, in many cases, workers felt bringing injuries or hazards to the attention of supervisors or managers would result in negative consequences ranging from nothing happening to being fired to being deported.

The workers suggested that training and strategies to improve communication between employers and workers would be important to addressing health and safety concerns in dairy. A more in depth discussion of these results will be described in another manuscript.

Limitations

This is a qualitative study, and we cannot generalize the frequency of the issues raised. Given the nature of the industry and the workforce, we feel it is likely that similar issues will be found elsewhere.

The tenor of reports about injury, safety, and health protection varied between groups. Undoubtedly, this was influenced by the location of the focus group and the means of recruitment. Overall, participants recruited by an independent recruiter (i.e., store owner) reported more hazards and safety concerns, and farm management issues emerged more spontaneously than among participants interviewed on the farm where they worked or participants recruited by an interpreter who performed independent-contract bilingual interpretation for several farms.

Generally, responses were more positive from the focus group that was held on a farm. This may reflect a healthier work environment or a reporting bias. Despite no supervisor or dairy management being present, the workers may have had concerns about lack of anonymity in their reporting to us. It must also be pointed out that by the time this focus group was held, this farm had already made significant strides

toward improving their safety environment, and so the more positive reporting might have reflected one or both of these influences. In one female-only, off-farm focus group, the farms' interpreter-liaison, a female, assisted in recruitment and was present during the focus group. This may have had a suppressive influence on the replies offered by the respondents. Focus group leaders perceived an initial reluctance to speak openly in this group but this relaxed over the discussion period. Additionally, this focus group was the only one to express a specific gender preference for a female trainer. This reported preference may have been influenced by the presence of the female farm interpreter.

Only workers from one focus group were known to be covered by workers' compensation insurance as verified by the farmer. This factor may impact their perceived level of risk, and they may have been more inclined to report higher levels of safety than the participants in the other focus groups. Participants from the other focus groups may or may not have been eligible for workers' compensation. If they were employed on a dairy farm with less than six employees, they were not likely covered. But this data were not collected. We did not verify who were eligible to receive workers' compensation insurance.

CONCLUSION

Immigrant dairy workers are employed in a dangerous industry. Most workers participating in our focus group entered this industry with limited experience working in large agricultural settings, and most had not received training to safely work in these settings. Importantly, the risk created by this knowledge deficit was amplified by the either self-imposed or employer-imposed silence regarding occupational hazards made salient by their legal status. Undocumented status appears itself to be an occupational hazard, as based on our information that it reduces a worker's ability to report both hazards and injuries. As we strive to improve health and safety in dairy, immigration reform is a critical policy change central to worker health and safety. Our findings suggest major potential weaknesses in the even now limited available surveillance data derived from major sources such as workers' compensation claims and OSHA 300 logs.

AUTHORS' CONTRIBUTIONS

All authors, as described by the ICJME recommendations, (1) made substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; (2) drafted the work or revised it critically for important intellectual content; (3) gave final approval of the version to be published; and (4) agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ACKNOWLEDGMENTS

The authors are thankful to the dairy workers who shared their time and insights with us, as well as those who assisted in participant recruitment and facilitation of the focus groups.

FUNDING

Authors received external funding for this project. Grant sponsor: Centers for Disease Control and Prevention; Grant number: U54OH010170.

AUTHORS' DISCLAIMER

The views expressed here do not necessarily reflect the official policies of the Department of Health and Human Services, nor does mention of trade names, commercial practices, or organizations imply endorsement by the US Government.

ETHICS REVIEW AND APPROVAL

This project was approved by the Marshfield Clinic Research Foundation Institutional Review Board (MCRF IRB). Participants were not required to sign a written informed consent per the MCRF IRB. Instead, verbal consent to participate in the study was obtained in order to protect the anonymity of participants and no personal identifiable information, such as name, birth date, or employer, was collected.

DISCLOSURE (AUTHORS)

The authors report no conflicts of interests.

DISCLOSURE BY AJIM EDITOR OF RECORD

Paul Landsbergis declares that he has no competing or conflicts of interest in the review and publication decision regarding this article.

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