



## Occupational risks and health: perceptions of indigenous female agricultural workers in Northwestern Mexico

Riesgos del trabajo y salud: percepción de mujeres indígenas jornaleras en el noroeste de México

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**ABSTRACT** The objective of this study was to learn the perceptions of indigenous female day laborers regarding health-related risks in the workplace, based on their own characterization of the requirements of agricultural work. The concept of occupational risk is understood as a flexible construct in which work conditions and the different perceptions and lived experiences of social actors are interrelated. A microstructural model is employed to explain the occupational risks and their relationship to social inequalities and impacts in health. The methodology used was qualitative, employing non-participant observation, participatory workshops and group interviews during 2011-2012. Sixty indigenous women participated in the study. Results reveal that their perception regarding occupational risks is constructed from everyday practices in their place of work and that most of their work activities place them in situations of risk.

**KEY WORDS** Working Conditions; Indigenous Population; Perception; Mexico.

**RESUMEN** El objetivo de este estudio fue conocer las percepciones de las mujeres indígenas jornaleras sobre los riesgos del trabajo relacionados con su salud, a partir de la caracterización que ellas mismas realizaron sobre las exigencias del trabajo agrícola. Se considera el concepto de riesgo del trabajo como un constructo maleable en el cual se relacionan las condiciones de trabajo con las distintas percepciones y vivencias de los actores. A partir de un modelo microestructural se explican y relacionan los riesgos del trabajo con las desigualdades sociales y su impacto en la salud. La metodología fue de corte cualitativo; se emplearon la observación no participante, talleres participativos y entrevistas grupales en los años 2011 y 2012. El grupo que participó en este estudio fue de 60 mujeres indígenas. Entre los resultados destaca que su percepción acerca de los riesgos laborales se va construyendo sobre la base de las prácticas cotidianas en el lugar de trabajo y que gran parte de las actividades laborales que realizan las coloca en situaciones de riesgo.

**PALABRAS CLAVES** Condiciones de Trabajo; Población Indígena; Percepción; México.

## INTRODUCTION

This article examines the perceptions of a group of female day laborers in a municipality situated in northwestern Mexico regarding the risks inherent to their working conditions. The research focused on female day laborers because of the scarcity of studies dealing with their perceptions of the risks inherent to their work, despite their growing participation in the agricultural sector. The main objectives of this study were to characterize the demands of agricultural work and to learn about the perceptions of this group concerning the health risks that they are exposed to in the course of performing their work. It was considered important to identify the practices and perceptions from the points of view of the actors, given that this would contribute to expanding available knowledge about the difficulties endured by indigenous female day laborers in Mexico.

Research was conducted in an agricultural valley of the municipality of Ensenada, Baja California, located in northwestern Mexico. The north of Mexico attracts many workers from the southern states given that it offers a higher standard of living and more job opportunities. Baja California – due in part to its economic dynamics and its geographical proximity to the US market – is a state that has attracted a workforce composed primarily of indigenous and *mestizo* [mixed ethnicity] workers (1). Agriculture is one of the state's primary economic activities, and is concentrated in two major production areas: the Mexicali Valley and the Coastal Zone. Farming in these areas is intensive; the most common crops include wheat, cotton, and alfalfa (in terms of the extent of the cultivated area), as well as tomato, strawberry, and chives (due to their high market value) (2). Close proximity to the US represents a competitive advantage for the production of Mexican crops, primarily due to the low salaries paid to day laborers, especially in states with the most significant production of fresh fruits and vegetables (1).

The flow of migrant workers within Mexico has increased in recent decades, as has the number of female day laborers. The feminization of agricultural work can be attributed to the “flexibility” of women in moving from one stage of the production process to another, or from one

product to another, and their progressive increase in productivity, among other factors (3-6).

Despite long working hours in uncomfortable postures with few rest periods, the lack of workplace safety measures, and exposure to hazards and diseases, these women continue to take jobs in the fields as they have few other options for economic subsistence. One of the major perils faced by day laborers is exposure to agrochemicals – which are highly toxic, soluble, and persistent – since they often find themselves working in the fields while pesticides are being sprayed. Hazards observed by other authors include accidents, respiratory diseases, skin conditions, gastrointestinal diseases, eye diseases, heatstroke, and animal bites (3,7).

As several authors have noted, alarming indicators of hazardous working conditions, work-related risks, and health issues related to those risks are relatively more prevalent among manual laborers, women, and temporary workers (4,8,9). Agricultural workers in particular are exposed to a large number of work-related hazards. However, their impact on worker health is given little attention by governmental bodies, agricultural producers, and even by the workers themselves. Familiarity with the day-to-day aspects of day labor reduces the perception of immediate peril arising from work-related hazards as well as long-term damage to their health.

Perception is created by context and social circumstances, and is therefore linked to the culture and social class of actors (10). In line with the perspective originating in Douglas and Wildavsky's seminal work, Arispe, Paz, and Velázquez (11) posit that perceptions are culturally framed and socially constructed through interaction among individuals. Consequently, reality is understood through the lens of perception, which is learned and reproduced by social subjects. Similarly, Morin notes that

...culture is the co-producer of the reality perceived and interpreted by each of us. Our perceptions are controlled not only by physiological constants, but also by cultural and historical variables (12 p.80). [Own translation]

Other authors have used the concept of perception as an important element in the study of

health from the points of view of actors, through the use of phenomenological models (13,14). Berube (15) defines risk perception as the subjective judgment made by individuals regarding the characteristics and severity of a risk, particularly natural hazards and threats to the environment or to health. Furthermore, since the 1950s there has been growing interest in the study of risk perception, particularly the contrasts between perceptions of risk on the part of professionals and those of the general population. The psychometric approach has been employed to clarify this contrast, and in turn has become the most influential methodological strategy (16-18). Research conducted from this perspective assumes that risk perception may be estimated. For example, Kahneman *et al.* (16) highlighted that individuals tend to evaluate the probability of being affected by a particular risk, which leads them to formulate judgments and informs their decision-making processes. Similarly, Finucane and Slovic incorporated notions of emotion and feeling to these instruments in order to measure how individuals evaluate and confront risks (17). Other authors, using a cognitive approach, developed the Health Belief Model to explain how subjects evaluate health risks on the basis of subjective criteria and assessments (19). This model has been critiqued on the grounds of a lack of correspondence between individuals' beliefs and their behavior when faced with health risks (20,21). Nevertheless, Rodríguez-Marín and Neipp López (21) have observed that this model may be useful for explaining preventive behaviors. Other authors, such as Janz and Beck (22), have proposed expanding the model by incorporating demographic, socio-psychological, and structural variables, which may affect individuals' perceptions and therefore influence their behaviors.

Nevertheless, these approaches are to some extent fragmentary, as they lack a holistic view. In this sense, Joffe (23) has emphasized that a more integral perspective is required, such as the theory of social representations, which would account for the specificity and complexity contained in the idea of common sense related to specific risks. This theoretical framework, rather than inquiring whether a response to a particular risk is appropriate or not, seeks to understand how and why such representations are created and how common sense evolves from them.

The objective of the present study was to become familiar with the perceptions of female migrant day laborers regarding the health risks inherent to their work, based on their own characterizations of the demands of agricultural labor. It was assumed that the risk perception is constituted through processes based on everyday practices in the workplace, as well as personal experiences and those shared with fellow day laborers.

The results presented in this article form part of a larger research agenda focused on the living conditions, quality of life, workplace hazards and demands, and labor and healthcare rights of indigenous women. The subject matter discussed in this article focuses on workplace hazards and health risks. The theoretical framework employed in this study is based on Benach and Muntaner (8), and consists of two models that together constitute a comprehensive theoretical framework: the macrostructural model, which places labor relations in a broader institutional context defined by social and power relations more generally, and the microstructural model, which connects working conditions (including exposure to physical or chemical hazards as well as work intensity) to healthcare inequalities. From this theoretical perspective, the organization of this article includes working conditions such as exposure and harm, as well as physical, chemical, biological, ergonomic and psychosocial risk factors. It is assumed that

...each risk factor may cause different effects on health through multiple and diverse mechanisms [where] dimensions such as social class, gender, and ethnicity are key relational mechanisms that explain why workers and their families are often exposed to multiple risks (8 p.38) [Own translation]

This model has been employed in order to describe the way in which the women that participated in this study conceive of workplace risk, in particular the articulation between the risks inherent to day labor to which they are exposed, and how they perceive them. The long- and short-term consequences that these work-related hazards have on the health of these women are also analyzed. In this sense, the concept of workplace risk is interpreted as a malleable construct in which working conditions are related to actors' diverse

perceptions and lived experiences. According to Lazos: "risks are not only perceived and judged, they are also lived" (24 p.83).

## METHODOLOGY

This study adopted a qualitative approach, using non-participant observation, participatory workshops, and group interviews. Throughout 2011 and 2012, 24 weekend visits were made to the women who participated in this study, as they generally worked during the week and had little time available. The four authors of this article conducted observations and kept records via field notes and photographs. These observations were focused on the living conditions in the homes of the day laborers, their participation in community meetings, and their work in the fields.

Regarding the workshops, two techniques were employed: the first involved listing the work activities that caused the most discomfort or illnesses using the free listing technique, and the second involved categorizing activities based on the type of illness or discomfort they provoked. The purpose of this exercise was to identify the range of activities that the women performed during the workday, the intensity and number of tasks they were required to carry out, and the way in which they experienced and perceived their working conditions. These techniques made it possible to access the universe of meanings held by the actors regarding their personal "realities" and to ascertain the meanings they attributed to their experiences; in other words, to gain insight into the actors' points of view. These participatory workshops were conducted with indigenous female day laborers ranging from 17 to 70 years old, belonging to two different ethnic groups (Mixtec and Triqui), from six agricultural colonies in the San Quintín Valley, who were selected based on a marginalization index. Two conditions had to be met by participants for selection: they had to be bilingual and work as day laborers (regardless of whether they had begun recently or had been involved in this activity for a longer period). Each workshop lasted approximately four hours and on average 20 people attended.

During the workshops researchers identified the participants that had the most work experience and the greatest availability to continue taking part in the workshops and group interviews. Six two-hour group interviews were held, whose objective was to explore in further detail the workers' living and working conditions, as well as their life trajectories. Four to five women participated in each interview.

## Ethical Aspects

The research protocol was approved by the Ethics Committee of the School of Medicine at the Universidad Autónoma de Baja California. All the women that took part in the study signed consent forms detailing the objectives of the research and guaranteeing them confidentiality and anonymity.

## RESULTS

More than two-thirds of study participants had worked in the fields for 10 to 30 years, with the youngest women having worked between one and nine years. Their wages ranged from 100 to 120 Mexican pesos (approximately nine to ten US dollars) per day, and the average workday lasted from six to ten hours. Pay rates during harvesting season were based on a piece-rate, determined by the number of 20-liter plastic buckets they were able to fill to the brim with fruit. Each bucket was valued between one and five pesos (approximately eight to forty cents). Usually, they worked three to six days a week during the busiest months, as well as most of the year. Some remained employed with the same producer for several years while others found work in different fields throughout the year.

Within this context, the women described their working conditions as difficult primarily due to long hours, and reported spending up to 13 hours away from their homes. Additionally, they reported having to wake up early in order to commute to the fields, spending at times more than eight hours completing their tasks, waiting for the day's payment, and finally returning home

late at night. They often did housework at night in lieu of resting. Below, extracts from their statements are presented in order to illustrate their points of view:

*When we have to commute a long way we get up at three to make our lunch then leave quickly for the highway to get to the fields, because the car leaves early depending on where it goes at five.*

*... you have to get up early. I used to get up at three in the morning. At four you have to be at the lot because the trucks have a long way to go; you usually get back around nine at night because it takes them so long to pay, so you get home at that time. Once I got home at eleven at night; halfway back the truck broke down and we had to wait there until they fixed it; you get home about that time. Then at eleven I took a bath, but since we didn't get paid that day I had to go back early the next day because if you don't go you don't get paid.*

Regarding working conditions, in some fields they were required to bring their own tools (shovels, hoes, scissors), as well as their own protective gear, such as bandanas to cover their nose and mouth, gloves, and hats or baseball caps:

*To strip off the leaves they used to give you scissors to cut off the tomato leaves, but not anymore, now you have to do it with your bare hands because they don't want you to wear gloves. You have to take a knife and scissors to cut the string when it gets tangled; sometimes you have to take gloves, sometimes a hoe.*

In addition to being difficult, working conditions are also dangerous. Pressure to fill the maximum number of buckets possible in the allotted time can lead workers to fall and injure themselves. Workers have no freedom to choose which tasks they carry out. In the words of a 69 year-old female day laborer:

*I fell off the ladder we use for getting on the cart, and I didn't want to climb back on, I told*

*the foreman that since I'm old now I wasn't going to climb on it anymore; I told him to give me another job, but he wouldn't give me one so I didn't work for three months.*

The demanding nature of the work forces the women to eat quickly near the fields, making social interaction between them difficult. Furthermore, this situation often leads to the contamination of their food by dust and agrochemicals. They are also exposed to changes in temperature and organic dust. As several noted:

*...while we are picking fruit they call us to eat, but we don't even get twenty minutes, we barely finish one taco and we have to go back. And we end up getting sick because we don't eat right.*

*...at work you get hungry and thirsty but you can't eat like you do at home, you eat while walking, while working.*

They spoke of the risk of accidents in their line of work and the lack of social security, which in Mexico includes healthcare, work accident and disability insurance, housing, and retirement plans among other benefits.

*...while I was working in the tomato fields I slipped because of all the mud [...] there are always a lot of accidents at work, because you slip, because you stumble, it's always dirty, there is a lot of brush, weeds, or water and it's easy to slip and fall.*

*You have an accident at work and they don't send you to the hospital, they send you home to rest and don't pay you those days. They send us home.*

Exposure to agrochemicals also constituted a risk for these women, even though they were not responsible for fumigation; nevertheless, they did apply weed killers to the leaves of the plants, which they refer to as "painting the sick plants." Female day laborers were practically sprayed with pesticides as they would remain in the fields during application, even when pregnant. They explained that although some employers took care of



them, others denied responsibility and blamed the women for not moving aside while the spraying of pesticides took place.

*Yes, yes we are there; they spray the liquids while you are there and that's how I got a rash on my face, because the liquid is so strong. Once I got hurt because I got a rash on my foot, I got a rash and welts all over my foot. The liquid hurt me because I was there while they were spraying and the liquid is very strong.*

*The liquid is harmful. It's wrong that we're there working and they send their people to spray the plants. It hurts a lot [...] they should spray on one field and take us to work in another.*

*...the liquid always harms us. You get a headache when the sprayer comes around. They don't care.*

The tasks they most commonly performed were harvesting, weeding, sowing, filling buckets, setting up trellises, and cleaning the ground in the strawberry, cucumber, zucchini, and tomato fields, which are the main crops of agricultural companies and private farms. Among the tasks they performed, the women identified those that they considered affected their health in general and those that they considered directly harmful to their health.

The tasks they considered harmful to their health were carrying heavy buckets, bad eating habits or eating too fast, working amidst organic dust, and having to remain in uncomfortable positions for long periods of time. Cutting, packing, and using shovels to remove plastic from furrows all require postures that cause pain and may result in long-term musculoskeletal injuries. Tasks that they considered possible causes of major harm to their health were climbing ladders (which may cause fractures due to falls), the use of knives and scissors (which exposed them to puncture wounds), and stripping leaves off of plants with no protection (which may cause skin and eye irritations) (a). In general, what made their work the most harmful was the pressure placed upon these women to perform their assigned tasks as rapidly as possible.

Regarding the tasks that the women interviewed considered a direct harm to their health, they mentioned contact with pesticides (which they referred to as "liquids"). In their opinion, the tasks that lead to the most exposure to agrochemicals were "painting with liquids" (b) the leaves of the plants; opening and closing the plastic covering (c) over the crop furrows to allow for the spraying of pesticides, putting on and taking off the plastic clips of the tomato trellises (d), pruning the plants, stripping off leaves, and weeding. It is worth noting that it is common for day laborers to work in areas where pesticides have recently been sprayed or while fumigation is taking place, and that in most cases they are not provided any kind of protective equipment.

The women interviewed stated that they frequently suffer skin irritation, itching, rashes, and welts due to exposure to pesticides:

*...there's been mild and even severe pesticide poisoning. Six months ago or so I suffered a very severe skin infection, I couldn't leave my house for a week [...] I was working while they were spraying, my face started itching and then it got tough, my skin got thick and tough like an elephant's, and it took a long time for the infection to go away and the itching was really strong like a severe case of mange.*

They noted that stripping the leaves off the plants often leads to headaches due to the amount of organic dust and "liquid" to which they are exposed. Remaining inside greenhouses for extended periods of time caused vomiting and headaches because they are exposed to fumes of the "liquid" sprayed on the crops. They were aware that the nausea and headaches were linked to the pesticides, which are poisonous. Even though they were aware of the acute effects of their working conditions on their health, they were less aware of the long-term effects such as chronic illnesses not recognized as a consequence of exposure to workplace hazards. The costs of the impacts on their health and the care they require after the onset of disease associated with their work are not offset by the meager wages currently paid to day laborers.

## DISCUSSION

Multiple studies have emphasized the damaging effects of work-related hazards on the health of agricultural workers. According to the International Labor Organization (ILO), the agricultural sector is among the most hazardous to worker health (25 p.5,26,27). Moreover, it is one of the sectors in which the precarious nature of working conditions and their impact on worker health are most accentuated, especially among female day laborers (28).

Given the progressive feminization of the agricultural sector, it is increasingly important to specify the relationship between working conditions and the occupational health of female day laborers. Research conducted by Lu in the Philippines has underscored the fact that the health of women working in agriculture must be linked to the risks and hazards inherent to agricultural work (29,30). Similar to the findings of these studies, our research indicates that for this group of female day laborers, working conditions and worker health are closely related, given that most of the activities they perform are physically demanding and constitute a hazard to their health. Some women commented that they attempted to avoid becoming ill at work, but most agreed that the demands and working conditions of agricultural labor hindered their attempts to take care of themselves and avoid illnesses. Due to the nature of labor relations, when they become ill they do not seek medical attention immediately because absence from work implies an economic sanction carried out by the employer.

Given the fact that highly technified agroindustry requires large amounts of agrochemicals, the exposure of day laborers to these xenobiotics is unavoidable. It has been widely acknowledged that immediate and long-term health damage caused by exposure to agrochemicals is one of the main risks faced by agricultural workers (31,32). According to Roa *et al.* (31), any person that is part of an agricultural worker's household may be at risk of agrochemical exposure, as workers may carry residual amounts of pesticides on their skin, clothes, shoes, or tools, which may in turn affect the health of any of the members of their household. The same study found that women

in the families of agricultural day laborers – in addition to having a fragmented and incomplete knowledge of pesticides and the risks posed by exposure – usually believe that only those directly exposed to the chemicals are at risk. It was also observed that these women were unable to differentiate between general symptoms and effects of pesticide exposure.

Contrary to this author's findings, despite not knowing the scientific names of these substances, female day laborers do have clear notions of the danger they represent. Although most day laborers claimed to never have been trained in pesticide handling, during group interviews they displayed satisfactory levels of knowledge of preventive measures against exposure to agrochemicals and were even able to clearly recognize the symptoms of acute pesticide poisoning resulting from this exposure.

In Mexico, agricultural work is frequently characterized by precarious working conditions and lack of workplace safety, associated with labor instability, lack of social protections, and low wages. In this sense, a recent study conducted by Lara (6) noted that not only is this line of work precarious, but so are the living conditions of the workers themselves, given that labor disadvantages are compounded by social disadvantages, thus generating a "spiral of precariousness" that translates into vulnerability and exclusion. Healthcare is generally obtained through affiliation with workplace-sponsored institutions, but the sectors of the population that do not have formal employment must access healthcare through the services of the Health Secretary and of private healthcare providers. However, there are significant gaps in the quality of healthcare received by different sectors of the population. At the national level, 49.8% of the population has no healthcare coverage. This rate is much higher among the indigenous population (33). With respect to agricultural day laborers, a large number of employers neglect obligations to register them with social security institutions, leaving them unprotected in the event of accidents and illness, and employers frequently send them home without pay on days that they are unable to work. As they lack formal labor contracts and work without even minimal protections or social security, they are exposed to even greater levels of job precariousness. From the

situation described above it can be construed that the negative impacts on worker health are not addressed by the healthcare sector, the agricultural producers, or governmental authorities.

## CONCLUSIONS

This study has outlined the interaction existing between the conditions and demands of agricultural labor and the health risks as perceived by indigenous female day laborers. We have addressed the perceptions of day laborers regarding the conditions and demands they face in their line of work and the possibilities and risks they perceive of becoming ill or seriously ill because of their work. The women that took part in this study agreed that the majority of the activities they performed were intense and physically demanding and that the multiple tasks they carried out put them at risk of workplace accidents and exposure to agrochemicals.

They were aware that the bodily postures that they had to adopt in order to perform their work, the few rest hours, the lack of workplace protections, and the exposure to agrochemicals all constituted impacts on their health. Despite this awareness, they had a tendency to minimize the severity of symptoms they experienced such as nausea, headaches, and skin irritations, as these issues were considered part of their everyday life and an unavoidable consequence of their work. This subjective belief enabled them to convey sense and meaning to the work they performed. Most agreed that the demands of agricultural labor prevented them from taking care of themselves in order to avoid illness. However, these women managed to tolerate and deal with the conditions, demands, and risks of their work given that they saw few alternative sources of employment, or in their own words: *"we don't have a choice."*

The women internalized these risks through particular cultural constructs and social practices, such as submission and denial, which are generally supported by the structural subordination of indigenous people in Mexico. Moreover, the women who participated in this study showed a tendency to minimize the risks in their line of work, permitting them to view them as a "natural" part of their job, and allowing them to adopt harsher self-imposed demands so as to increase their productivity and therefore increase their daily incomes. It is possible that the minimization of work-related risks can be attributed to what they perceived as the inherent demands of their line of work. From their own experience they were aware that their working conditions tend to encourage their exploitation, and they also knew that it would be difficult to find another job; however, the unequal social relations they are subjected to as indigenous women may be useful in explaining why this sector of the population has fewer job opportunities and lower incomes.

To summarize, gaining awareness of the perceptions of female migrant day laborers regarding the health risks related to their work and the manner in which they portray the demands of their work allowed the authors to become familiar with the ways in which these women constructed a part of their work life. The purpose of this study was to approach the subjective construction of what these indigenous women perceived and knew regarding the work-related risks they continuously faced in the fields and how they related them to the impacts on their health. The authors found that the perception of female day laborers regarding work-related health risks was built on everyday practices in the workplace, from their own experiences, and those they shared with their fellow day laborers.



## ENDNOTES

a. The fine hairs that cover the leaves of certain fruit and vegetable plants cause irritation upon contact with the skin.

b. The women use fine brushes to cover the leaves of the plants with the fungicide chlorothalonil, applied to prevent infection due to its multi-site mode of action.

c. A technique in which plastic is used to cover crops so as to encourage the necessary amount of humidity and temperature and reduce weed growth.

d. The training clip is designed to hold the stem of the plant to be supported and is used to increase the production of the crop as well as reduce the amount of space required for each plant to grow.

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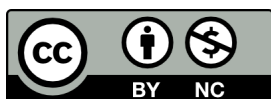
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