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Chinese Immigrant Restaurant Workers' Injury and Illness Experiences

Jenny Hsin-Chun Tsai, PhD, ARNP, PMHCNS-BC

ABSTRACT. Restaurants are an important source of employment for immigrants in the United States. This article discusses the findings from an ethnographic study on Chinese immigrant restaurant workers' occupational injury and illness experiences. Eighteen participants were interviewed; 10 of whom attended follow-up focus groups. The author used ethnographic content analysis to analyze the data. On-the-job cuts and burns were the most common injuries. Musculoskeletal disorders, or specifically aches and pains, soreness, or numbness were the most troubling occupational illnesses. The author identified three cultural concepts pertinent to the causes of occupational illnesses during data analysis. Participants used multiple methods to heal their injuries and illnesses and to keep themselves safe and healthy. Implications for cultural competence in US occupational safety and health research and practice and elimination of health disparities in immigrant workers conclude the article.

KEYWORDS: Chinese immigrants, cultural competence, ethnographic content analysis, health disparities in immigrant workers, occupational injuries and illnesses, restaurant workers

Immigrants are a major workforce source for the United States. According to the Bureau of Labor Statistics 2005 data,[1] immigrants composed approximately 15% of the US workforce aged 16 and older. Increasingly, immigrants are seeking restaurant jobs because formal credentials are generally not required to work in the most prevalent, lower skilled restaurant positions.[2] *The New York City Restaurant Industry Analysis*,[3] for example, reported that in 2000, 67.5% of restaurant workers in New York City were immigrants, representing a 19.5% increase from 1980. The National Restaurant Association reported[4] that 26% of food- and drinking-establishment employees speak a language other than English at home, and that there is an increased hiring of immigrant workers in the US restaurant industry.

A multitude of occupational hazards are present in restaurants[5–7] and pose a threat to restaurant workers' safety and health. In 2005, employees from restaurant and other food and drinking establishments accounted for 5.7% (n = 241,300) of nonfatal occupational injuries and illnesses in the US private industry and 4% (n = 52,130) of nonfatal occupational injuries and illnesses requiring days away from work, job transfer, or restriction.[8] Sprains and strains are the most reported nonfatal injuries involving days away from work. Cuts, lacerations, and punctures have the second highest incidence rate, followed by heat burns.[9,10] As for occupational illness, musculoskeletal disorders (MSDs) are common to restaurant workers, with soreness and pain being the most reported symptoms.[9,11] Associations among food services workers and contact dermatitis, respiratory symptoms, and cancer have also been reported.[5,6,12,13]

Most of the current literature uses epidemiological approaches to describe the pattern and magnitude of work-related injuries and illnesses among restaurant workers. Although the literature addresses the breadth of the problem, it has major limitations for addressing immigrant restaurant workers' occupational health and safety. US Occupational Safety and Health Administration (OSHA) logs, workers' compensation claims, and hospital records are the primary

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data sources for the current literature, yet these sources have been deemed unreliable in capturing the true extent of the US workforce's injuries and illnesses.[14,15] In addition, public policies pertinent to service use, health insurance coverage, cultural and language factors, immigration and citizenship status, and low-income classification make immigrant workers—both legal and undocumented—reluctant to report injuries, seek medical assistance, or take time off work.[16,17] Thus, the reporting problem is particularly apparent with, and detrimental to, low-wage immigrant workers who are more vulnerable than their native-born counterparts. Alternative data collection methods should be considered to further understand the extent of immigrant restaurant workers' injuries and illnesses.

More important, the current epidemiological literature does not contribute to the understanding of occupational injuries and illnesses as a sociocultural experience. Anthropologists and sociologists have pointed out that meaning and perceptions of experience (eg, injury or illness) may vary because each individual's view of the experience is culturally shaped.[18,19] To succeed in changing immigrant workers' behaviors to promote their health and safety, research is needed to explore the cultural context of worker behaviors. Ethnography is a methodology grounded in a commitment to explore human experiences within particular sociocultural settings using a range of data-gathering techniques and data sources.[20] It is suited for exploring immigrant workers' cultural experiences because of its focus on the socially constructed reality of occupational experiences.

To address the gaps in the literature, this article focuses on Chinese immigrant restaurant workers' occupational injury and illness experiences and the efforts they make to promote occupational safety and health in their sociocultural immigration contexts. The data for this article were collected as part of a larger ethnographic study that used interviews, participant observations, and paper-and-pencil questionnaires to explore Chinese immigrants' occupational experiences, health and safety issues associated with their restaurant work, and individual and contextual factors influencing their experiences. Because of space limitations, the Methods section only includes information pertinent to the foci of this article.

METHODS

Setting and Participants Recruitment

The study was conducted in metropolitan Washington state from 2004 to 2006. Prior to the start of the study, human subjects approval was obtained from the principal investigator's (PI) affiliated institution. Participants were given a complete explanation of the study during the informed consent process. Once their questions were answered and they agreed to participate, written consent was obtained prior to data collection for each participant.

Using purposeful sampling among the PI's social networks and the research coordinator's interpreter-serivices contacts, we recruited immigrant workers who were (1) foreign-born Chinese, (2) aged 18 or older, and (3) Chinese or English speaking. From previous experiences with immigrant populations, the PI found network referral to be an effective method to recruit participants for purposeful sampling. An additional criteria was having a minimum of 6 months work experience in restaurants because it generally takes 6 months for new immigrants to begin to understand their surroundings.[21] The 6-month time frame was considered sufficient for participants to understand their workplace and provide informative information about their experiences. In addition to the broad inclusion criteria, sex, age, job category, types of restaurants, length of time working in restaurants, and geographic locations of the restaurants took precedence in sampling consideration to achieve representative coverage and inclusion in qualitative research. Recruitment and data collection were discontinued when the study reached data saturation or informational redundancy.[22]

Data Generation

Data reported in this article were generated through 18 completed 28-item Demographic and Immigration Questionnaires (DIQs), 18 semistructured individual interviews, 3 follow-up individual interviews, and 4 focus groups. The PI (proficient in Chinese) and the coordinator (proficient in both Chinese and Cantonese) were responsible for the data collection. (Cantonese is 1 dialect spoken by the Chinese and can be written in Cantonese or Chinese [Mandarin]. The written forms of these 2 languages are similar, but Cantonese writing also includes characters used to represent sounds phonetically.[23] Cantonese is a commonly used Chinese dialect in the United States.) The DIQ was collected at the beginning of the individual interview. Developed in Chinese for the study, the DIQ was designed to provide general understanding of the sample's demographic and immigration background. The individual interviews were 1.5 to 2.0 hours in length. To obtain a range of experiences (or phenomenon variations) and the domain of the phenomena beyond a single participant's personal experience,[24] participants were probed to describe not only examples from their personal experiences, but also other people's experiences that were known to them. A total of 21 interviews, including follow-up interviews with 3 participants, were conducted.

Upon completion of the interview data analysis, each participant was invited to attend a focus group (FG) to help validate and refine data interpretation. Anthropologists Agar and MacDonald[25] suggested that the interviewees provide the interviewers with a full explanation of their insiders' perceptions, reasoning, or actions about the phenomenon studied in individual interviews. Through information exchange among group members, FGs permit the researchers to further validate the findings that are derived from their analysis of individual interview data for completion. A total of 4 focus groups were conducted with 10 participants. At each FG, the PI (facilitator) presented a brief summary of the results and then asked how the results were consistent

with the participants' experiences. Participants were also asked about their coworkers' experiences. Most examples were similar to what had already been discussed in their individual interviews, thus validating much of the information; occasionally, new examples were introduced and this served to enrich the data. Chinese was the primary language used in the FGs. If the participants used Cantonese to express their ideas, the coordinator served as an interpreter (in addition to his moderator role) for the PI during the interview.

Data Analysis

The coordinator transcribed each interview. After transcription, the PI checked 4 randomly selected transcripts against the interview recording for transcript accuracy. No serious content omission or mistakes were found. Errors were mostly due to a participant's accent or use of colloquialism. Using the principles of ethnographic content analysis,[26] the PI read each transcript word by word and highlighted the texts that appeared to capture the injury or illness experiences with descriptive codes. The impression or thoughts about the data were noted as memos. Once all of the transcripts were coded in ATLAS.ti[27]—a qualitative data management software—all of the highlighted texts with codes (eg, physical symptoms, self-care efforts) related to injury and illness experiences were retrieved and printed out for further within- and between-interviews comparisons. The purpose was to explore similarities and differences, identify overlap and/or duplications of codes, and ensure that no important codes were overlooked. While examining the retrieved data segments, the PI revised some codes or quotations. After multiple iterations of recoding, the last step was to integrate the final set of codes into meaningful categories or analytical statements on the basis of how the codes were related and linked. To ensure that alternative interpretations of the data were considered, the PI coded each transcript in consultation with the coordinator or the co-PI (an English-speaking occupational safety and health researcher).

RESULTS

Demographics of Study Participants

Study participants consisted of 9 women and 9 men who emigrated from China (n = 9), Hong Kong (n = 4), and Taiwan (n = 5) to the United States between 1970 and 2002. The mean age was 48.8 years (SD = 13.5 years). All participants were admitted through family sponsorship, except 1 person who was sponsored by his former US government-based work. Twelve participants had obtained US citizenship and the rest had permanent residence status (otherwise known as a green card). Among 18 participants, only 1 person had work experience in restaurants prior to coming to the United States. At the time of the interview, each participant had worked in restaurants for 10 months to 25 years (M = 6.3 years, SD = 7.6 years); occupations included busperson (n = 1), waitperson (n = 9), cashier (n = 3), dishwasher (n = 5), food preparation assistant (n = 4), chef's assistant (n = 3), cook (n = 4), and owner (n = 4). Nine participants had experienced at least 2 types of occupations. The 4 participants who were owners also worked in various capacities (eg, cashier, cook, or waitperson) in their own restaurants. All 18 participants worked in full-service restaurants, mostly Chinese restaurants. Three had exclusive experiences in non-Chinese restaurants: American, Greek, and pan-Asian.

Occupational Injuries: "It Happens All the Time"

Nature of Injuries and Common Causes

All 18 participants had experienced minor nonfatal occupational injuries that required no more than first aid. Cuts were the most frequently mentioned *kung-shang* (injury at work). Regardless of the type of restaurants in which they worked, broken glasses or dishes were the common causes of cuts. Three participants also reported 6 serious incidents encountered by their coworkers that were caused by knives, broken dishes, or meat slicers and required stitches or even multiple surgeries to heal. Burns were the second most mentioned nonfatal injury. All but 2 reported cases were minor burn injuries. Hot oil, hot plates or dishes, and hot water were common sources of the injuries. Unlike other burn injuries, 1 food preparation assistant reported a unique incident caused by wearing a wrist bracelet. She stated, "I had a bracelet on when I was frying stuff. I was frying, frying, and frying. Mealtime went on for several hours. Wow, my entire bracelet became hot! But it was tied to my wrist. I felt the heat and tried very hard to get rid of it. But it was still there." As a result of this event, she learned not to wear any metal jewelry to work.

Five participants also reported strains, sprains, broken skin, and eye irritation. Moving or carrying heavy objects, such as pounds of food or a stack of trays, was a common cause of strains. One waitperson reported an ankle sprain caused by missing a stair step. A dishwasher experienced broken skin as a result of cleaning spoiled pots and pans. "You know, it is harder to clean the stuff used for roasting. Then the pans used to fry fries are covered with oil. You clean them with a scrubber back and forth. Your skin becomes thick and breaks from those spots," said the dishwasher. Another dishwasher witnessed his coworker's eye injury. He stated, "[I saw it] twice. . . . [They] carelessly dumped things [into the sink]. Bleach water splashed over everywhere and got to [her] eyes. . . . She took a day off on the next day." Participants did not deem any of these injuries as serious or requiring medical treatment.

Acceptance of Minor Occupational Injury

Despite frequent encounters of injuries such as minor cuts and burns at work, participants perceived these injuries as inevitable when working in restaurants. Statements such as "hurting [your] hands or feet, sure . . . getting cuts, or

bleeding—these are sure things" or "hands get burned all the time" were common in the data. There was a sentiment among participants that minor injuries in their work was expected. As a waitperson with 13 years of experience stated, "[I] have worked [in restaurants] for many years, haven't seen (brief pause) any big things like kitchen people or waitpersons needing to go to the hospital. It's always been (brief pause) these small things, like being cut by a knife." Overall, the participants were not very concerned about their safety at work. A dishwasher who had worked in a non-Chinese restaurant for 6 years casually stated, "Oil sometimes would fall on your feet. Just a small drop. Burn medicines or (brief pause) bandages (in English) are in the bathroom. They [cooks] would just put it on themselves!" Even the 3 participants who had reported serious laceration incidents encountered by their coworkers did not appear to be concerned about the occupational risk they might face in restaurants. Among all 18 participants, only 1 waitperson, who was a nurse in China, showed slightly greater concern over possible burn injuries. "Because I worked (brief pause) on a burn unit before, I particularly fear of these things. Water, no big deal. But if it's thick liquid [like sweet-and-sour sauce or congee], it's problematic. You can't wipe it off," she said. Her professional experience in China appeared to influence her perception.

Occupational Illnesses

Nature of Illnesses

MSDs were the most mentioned occupational illness (*chih-yeh-ping*, ie, occupation-caused disease) in the data cited by 16 participants. Arthritis (*fan-shih*), frozen shoulder or adhesive capsulitis (*chou-chien-yen*), and carpal tunnel syndrome (stated in English) were named by 3 participants. Nevertheless, participants included pain, aches, soreness, and/or numbness in shoulders, backs, wrists, fingers, knees, legs, or feet; deformity of fingers or toes; and cramp in legs in the category of *chih-yeh-ping*. For instance, a waitperson reported having pain in both shoulders and hearing coworkers complain about "sore lower back and achy bones," "achy feet," or "shoulder pain." A dishwasher stated,

> When it's busy, [my hands] get quite tired. You need to use fingers to grab things or move things up [and down]. After awhile, your hands and joints feel pain. . . . Legs also get tired. In fact, after you have worked [in restaurants] for some time, your joints feel sore sometimes. Usually your legs feel tired as well.

The participants perceived waitpersons and kitchen workers as more susceptible to musculoskeletal problems than workers in other restaurant positions. Musculoskeletal aches and pains disturbed some participants' sleep; 2 participants were forced to leave their jobs because of their severe shoulder problems.

In addition to musculoskeletal disorders, several participants also mentioned skin allergy, chronic poor skin conditions, stomachache, and pulmonary problems. For instance, as a result of contact with detergent, the dishwasher who developed frozen shoulder 1 month after starting work also experienced skin problems. She stated, "My whole hand was damaged because I have bad skin. . . . It's painful! How could it not be? The area was all damaged. You have muscle in there." Needing the job, this dishwasher endured the pain caused by frozen shoulder for 2 years; ultimately, she had to quit the job because of her skin problem and the pain associated with her bad skin.

Causes and Cultural Interpretations

Engaging in repetitive motions over time was the most cited cause for participants' aches and pains. These motions included grabbing and loading or unloading dishes, carrying heavy loads of objects, moving cookware such as woks up and down, constant use of fingers to prepare food, long hours of standing, and constant walking or running. As a waitperson stated, "[*Chih-yeh-ping is*] like pain in your shoulders. Your legs walk too much. What you do basically needs you walk constantly. Maybe this can lead to—oh, I don't know, perhaps *ku-tsu* [spinal hernia] and also affect joints." An owner and former waitperson stated that because "they often stand for 10 hours or more," kitchen workers, in particular, often experienced swelling and pain in the knees and feet.

Constant walking or running and frequent use of fingers to prepare food were also perceived as causes of toe or finger deformity, respectively. A quote from a participant who had worked in restaurants for 10 years as kitchen staff, waitperson, and busperson is illustrative:

> You walk most of the time. You can calculate (brief pause) how many miles you walk [at work] each day. . . . Often the soles of your feet become numb after walking. . . . The shapes of [my] toes all have changed because the shoes have pressed (brief pause) on them. They all have become flat.

Three cultural concepts related to aches and pains and stomachache emerged from the analysis. The first concept was *lei*, which could mean tiredness, fatigue, no energy, or weariness in Chinese. This concept was also used to describe an external demand, such as participant's workload, and a force that brought on or aggravated their aches and pains. As one waitperson stated, "It is not dangerous to work in restaurants. But *lei*—yes. When you are busy, you need to go in and out constantly. You need to carry bowls and plates [into the kitchen] and also carry the dishes [out]. Your entire lower back is in pain. When you are *lei*, your body feels tired." A dishwasher stated, "Because of *lei,* I became ill. I worked there for half a year. Others thought I changed a lot because I was ill . . . *chou-chien-yen* (adhesive capsulitis/

frozen shoulder)." Later in the focus group, this dishwasher stated that *chou-chien-yen* was a chronic condition and hard to "get rid of completely." She was pain-free when she did nothing these days. However, once *lei* became apparent, even at a lesser degree, her pain would come back.

The second cultural concept was related to balance and regularity. Chinese believe that maintaining harmony and balance, as well as staying in the middle of the Tao (or way), are critical to health.[28] Participants generally ate meals at their restaurants. Because of the nature of their work, their lunch could occur at any time between 2 PM and 4 PM and dinner after 9 PM or 10 PM when few customers were around. Also, having an uninterrupted meal was challenging. A waitperson said, "When [you] were very hungry, you could not help but sneak some food [from the kitchen]. When you got it, you had to put it [in your mouth] right away." The irregularity and imbalance of eating was considered the cause of stomachaches that their coworkers had developed.

The third cultural concept reflected Chinese medicine's conceptualization of pathogens for disease. One category of pathogens are exogenous agents: wind, cold, summer heat, dampness, dryness, and internal heat (fire, warmth).[29] From the participants' perspectives, water, frozen food, and cold air put kitchen workers at risk for arthritis, or *fan-shih* (literally translated as "wind dampness"), or other joint problems. As a former waitperson and owner stated in a FG, "[Those] who make cold food like chicken, frozen shrimps, they have to take them out, defrost, and peel off the skin. There are a lot of times that they can get *fan-shih*, because they have to soak [those foods] in water, clean stuff [in water]." Two dishwashers believed that *fan-shih* in their fingers was caused by prolonged contact with water at work, one of whom suggested that pain medications used for "joint pains" by Americans were not very useful because "you're in contact with water for a long time." In addition to *lei*, the dishwasher with frozen shoulder also pointed out how cold air and water affected her health. She stated,

> Our ventilation is so good that freezes you. [My] frozen shoulder also has something to do with it. When they fry chickens, they keep the door open at least half of the day. Just think about it, how cold it is in the kitchen! You constantly are in contact with water . . .Water is everywhere, it's very wet . . . There is a *fan-shih* problem.

Efforts for Self-Care

Taking time off work to rest was considered effective medicine to help participants heal. However, this was not always an option for the participants. Typically, participants applied first aid to their injuries and then continued their work as usual. (A few participants' coworkers were eventually hospitalized because their injuries required more than first aid.) A first aid kit was available at most participants' workplaces. One dishwasher, however, specifically told the interviewer that he liked to use the bandages that he brought from China because "when they get wet, they do not fall off [like the ones you get here would do]." Hence, rather than relying on the bandages provided by the employer, this worker brought a private supply to work for his on-the-job injuries.

Participants used both Chinese and Western medicine for healing their injuries or illnesses. Chinese medicine products, including *ching-fan-hung* (ointment for burns), *wan-ching* oil (multipurpose over-the-counter medicine), *tieh-ta-chiu* (medicine wine with Chinese herbs soaked in it), and Chinese herbal patches, were used to treat burns, strains, sprains, or aches and pains. These treatments were used intermittently or consistently over a period of time if the problems persisted. As a waitperson stated, "One time I was moving my arm up to pour tea for customers. My arm suddenly stopped moving. I called in sick the next day. I was very scared. . . . I wondered if I would become disabled some day. I was very scared. Then I put on *tieh-ta-yu* [oil used for sprains and strains] that I had at home for 2 days. It started to loosen up."

Unlike Chinese medicine, Western medicine was typically considered when the problems were too serious to be eased, if not cured, by Chinese medicine or other means (eg, gently moving shoulders around). One waitperson who treated on-the-job sprains with Chinese medicine wine for a month stated that he did not go to a Western doctor because "[he] did not want to take the trouble to do it." Among the 18 participants, 4 visited Western medical providers. Rest, exercise, pain medications, and surgery were prescribed. One waitperson who was a high school teacher in Taiwan was an exception in discussing the use of Western medicine to help treat sore feet. "My coworkers spoke of sore feet. But they said taking Vitamin-B complex was helpful. . . . At the time I just started [working], and I didn't have experience. I went home and felt that my feet were very sore. After taking B-complex, I got better. That's miraculous," she said. This participant's education background in her home country might have influenced her acceptance of such a preventative approach.

The participants described how they focused their attention on health to alleviate their aches and pains and keep their body active. "Being careful" was a phrase a few participants used to express their belief that an individual's ability to stay focused on the tasks was vital to keeping them from injury at work. Ignoring the aches and pains was another mental tactic to take their mind off the problems. Despite the pain, gentle movements were used to help loosen up stiff shoulders or lessen the aches and pains. A quote from the waitperson with frozen shoulder illustrates the gentle movement idea:

> It was painful. I could not even move my arms up to wash myself. . . . (imitating teeth biting) I had to set my teeth firmly to do it. After half an hour, they could gradually loosen up. I remember watching those martial art movies in China. . . . I thought they made it up. Now I understand, it is true that it becomes better after moving it around.

In addition to being reactive to injuries and illnesses, participants also tried proactive approaches to keep from incurring occupational injuries and illnesses. Keeping the floor clean and dry was a practice used to prevent falls. Using tools or a piece of cloth to hold hot plates or containers was a method to prevent burns. Some participants purchased support shoes with grooves on the soles on the basis of their employers' or coworkers' suggestion; 1 waitperson also used support pantyhose and girdles and back supports. Although the supplies might not be sufficient at all times, gloves were reportedly available at some restaurants. However, when asked about glove use for preventing cuts or contact with chemicals (eg, bleach), participants were consistently negative about using gloves. Here are 2 examples from dishwashers:

> Getting cut is inevitable. But I am not used to wearing gloves. It makes it difficult to do my work.

> When I just started, I thought about wearing gloves. But after awhile, you (brief pause) just forget about it (laugh). Because you want to be able to do your work fast. It's very cumbersome to wear gloves. Also gloves in America are not easy to use. They are very small. The ones that fit [your hands] are hard to put on and hard to take off. . . . Those gloves are only up to [your wrist] (pointing to his wrist). Water always goes in.

Because of the hindrance caused by gloves, participants did not use gloves for injury protection. The waitperson who was a teacher in Taiwan also mentioned taking a nap before going to work and taking a hot bath as soon as she came home, as well as paying attention to body mechanics.

COMMENT

The restaurant industry, a subcategory of the Food Services and Drinking Places industry sector, is the largest private employment sector in the United States. Approximately 12.8 million people were employed in 2007, and 2 million jobs are expected to be added over the next 10 years.[30] Chinese immigrants have been a major workforce for this industry,[31] yet little is known about this worker population's occupational injury and illness experiences. This ethnographic study interviewed 18 Chinese immigrants who had been in various positions in restaurants for 10 months to 25 years in the United States. The ethnographic content analysis results reported in this article provide insights into the types of injuries and illnesses they experienced, their efforts to maintain their safety and health, and the cultural underpinnings of their experiences.

Study participants evidently knew the terms *occupational injury* and *occupational illness* in Chinese. The examples they used to illustrate their injury or illness experiences suggest that their general understanding of these 2 categories was consistent with the US definitions.[32] Because the Western concept of occupational safety and health has been adopted by China, Hong Kong, and Taiwan in their systems, it was not entirely a surprise that participants' general conceptualization of occupational injury and illness was consistent with the US definitions. Overall, the types of injuries and illnesses reported by the participants were similar to the literature from US OSHA logs, workers' compensation claims, or hospital records. This study added a focus on stomachaches, chronic poor skin conditions, and eye irritation as worker health concerns, a finding that differs from the commonly recorded occupational injuries and illnesses.

This study reveals that participants not only understood the likelihood of work-related injuries, but also accepted minor injuries as part of their work. Nearly all participants talked about their occupational injury experiences lightly and did not perceive any serious work-related safety risk. Cuts and heat burns are the second and third leading injuries causing employees from restaurant and other food and drinking establishments to miss work;[9,10] thus, there is a likelihood for Chinese immigrant restaurant workers to experience more serious cut or burn injuries. Injury prevention education on the potential severity of these injuries and range of potential causes could help increase workers' awareness of their occupational safety risk and further change their prevention behavior.[33] Local Chinese newspapers and Chinese cable television would be good media to disseminate the information; collaboration with agencies, organizations, or individual health care providers known and trusted by Chinese immigrant workers is another means to outreach the population. Moreover, participants' resistance to use gloves for protection suggests a need for research in developing products that are more suited to restaurant work and identifying means that would motivate restaurant owners to modify their practices to increase employees' use of gloves or other personal protective equipment (PPE).

Occupational illnesses—mainly the musculoskeletal problems—have different sociocultural meanings than injuries to the participants. The impacts of these problems on the participants were not only physical (eg, pains and aches, swelling in feet,) but also psychological (eg, poor sleep, scared and worried about becoming disabled). The interference in participants' daily functioning was so significant that a few participants became emotional when describing their experiences in the FG. This finding has significant implications for health disparities among immigrant workers. Work-related MSDs represent a significant concern in the current work environment. Early detection and treatment of MSDs is critical to better prognosis.[34] Because restaurant work is typically low wage and lower skilled,[2,35] workers, like the study participants, feel pressured to continue to work through pain without taking time off to rest. Unlike their US-born counterparts, immigrant restaurant workers face additional barriers for early detection and treatment: immigration and citizenship status, English proficiency, and knowledge about the US culture and systems.[16,36] Instead of seeking care from Western medical providers for early diagnosis and treatment, study participants used Chinese

medicine products to relieve their symptoms so the impact of their symptoms on their work and daily living would be lessened. Only 4 of the 18 participants went to Western medical providers after Chinese medicine or other means failed to relieve their symptoms. To better address MSDs in immigrant restaurant workers, further large-scale studies are needed to understand the magnitude of MSDs among immigrant restaurant workers; the impact of MSDs on their work performance, daily living, and well-being; health-seeking processes for MSDs; and cost-effectiveness of non-Western or nonmedical strategies for treating MSDs. Moreover, a few participants proactively used PPE to decrease the stress that was put on their body, and one person mentioned paying attention to body mechanics. From a preventive perspective, future research should further examine immigrant restaurant workers' use of PPE and other preventive strategies and factors associated with their choices to reduce their risk of developing MSDs.

The 3 cultural concepts identified during data analysis were an unexpected but valuable finding for the quest to address health disparities in immigrant workers. Anthropologists and cross-cultural scholars have called attention to the relationship between culture and health for decades.[19,37,38] Because of racism and ethnocentrism, we have not effectively addressed culture in clinical practice and program development. The practices, beliefs, and values inherent in the Western biomedical culture are too often embedded in clinical practices and programs. Instead of recognizing such care or programming itself is a barrier to ethnic minorities and immigrants, the culture of these groups is perceived as a problem, impeding care and better health outcomes.[38,39] With US demographic changes and increasing concerns of ethnic disparities in health and health care, culturally competent systems of care and research are increasingly recognized as an effective strategy to eliminate health disparities.[40–42] Nearly 12 years ago, the National Institute for Occupational Safety and Health identified ethnic minority and immigrant workers as "special populations at risk" in its first National Occupational Research Agenda[43] and called for more research with these groups. Since then, there have been growing efforts to deliberately take culture into consideration and engage ethnic communities in designing research or interventions to ensure cultural appropriateness.[44–46] To the best of our knowledge, our study is the first to focus on Chinese immigrant restaurant workers' occupational health and safety issues. Findings on the 3 cultural concepts could enhance cross-cultural communication between clinicians in occupational health or primary care and Chinese immigrant restaurant workers. In addition, future research may benefit from the insight our study provides and may use it to develop cultural knowledge about other immigrant worker groups so that there will be a greater body of knowledge to enhance our capacity to reduce health disparities in immigrant workers.

This study has limitations that should be considered when interpreting its findings. First, although data saturation was reached, the sample consisted of only 18 Chinese immigrants recruited from a metropolitan area. The findings have limited generalizability. Second, to achieve representative coverage and inclusion, sex, age, job category, types of restaurants, length of time working in restaurants, and geographic location of the restaurants were considered in sampling. There was a range of representation in the sample with regard to these variables, except that the participants mostly worked in Chinese restaurants in western Washington. This sample was homogenous in variables such as immigration status and immigration mechanism, which limits our ability to reflect potential difference associated with these variables. Further studies could consider using other qualitative research sampling approaches[47,48] to gain more comprehensive understanding of immigrant workers' illness and injury experiences.

Conclusions

The US restaurant industry is expanding and so is the diversity of its workforce. This article describes findings on Chinese immigrant restaurant workers' occupational injury and illness experiences and their ways of self-care for work-related injuries and illnesses in their sociocultural immigration contexts. Although additional research is needed, study findings provide insight into the sociocultural underpinnings of Chinese immigrant restaurant workers' work-related injury and illness experiences. There is an ongoing research movement that is attempting to understand how definitions of health and constructions of health care systems promote disparities among US ethnic minorities. Such scholarship is still in its infancy in the field of occupational safety and health. This article provides preliminary evidence to further the national effort to explore how health disparities are created and sustained in immigrant workers.

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REFERENCES

1. Bureau of Labor Statistics. Labor force statistics from the current population survey. Washington, DC: US Department of Labor; 2005. http://www.bls.gov/cps/home.htm. Accessed October 10, 2006.
2. Bureau of Labor Statistics. Food services and drinking places. Bulletin 2601. Washington, DC: US Department of Labor; 2005. http://www.bls.gov/oco/cg/print/cgs023.htm. Accessed March 18, 2006.
3. Restaurant Opportunities Center of New York (ROC-NY). *The New York City Restaurant Industry Analysis: The Quantitative Report*. New York, NY: ROC-NY; 2003.
4. National Restaurant Association. Restaurant industry facts, 2006. http://www.restaurant.org/research/ind_glance.cfm. Accessed March 27, 2006.

5. Siegel M. Involuntary smoking in the restaurant workplace: a review of employee exposure and health effects. *JAMA*. 1993;270:490–493.
6. Svendsen K, Sjaastad AK, Sivertsen J. Respiratory symptoms in kitchen workers. *Am J Ind Med*. 2003;43:436–439.
7. Tsai JH, Salazar MK. Occupational hazards and risks in restaurants faced by Chinese immigrant workers. *Fam Community Health*. 2007;30:S71–S79.
8. Bureau of Labor Statistics. *Workplace Injuries and Illnesses in 2005*. Washington, DC: US Department of Labor; 2006. Publication no. USDL 06-1816.
9. Bureau of Labor Statistics. Occupational injuries/illnesses and fatal injuries profiles. Washington, DC: US Department of Labor; 2005. http://data.bls.gov/GOT/servlet/InitialPage. Accessed June 28, 2007.
10. Webster T. Occupational hazards in eating and drinking places. *Compens Work Cond*. Summer 2001; 27–33.
11. Dempsey PG, Filiaggi AJ. Cross-sectional investigation of task demands and musculoskeletal discomfort among restaurant wait staff. *Ergonomics*. 2006;49:93–106.
12. Dickel H, Kuss O, Schmidt A, Kretz J, Diepgen TL. Importance of irritant contact dermatitis in occupational skin disease. *Amer J Clin Dermatol*. 2002;3:283–289.
13. Ko Y-C, Cheng S-C, Lee C-H, et al. Chinese food cooking and lung cancer in women nonsmokers. *Am J Epidemiol*. 2000;151:140–147.
14. Azaroff LS, Levenstein C, Wegman DH. Occupational injury and illness surveillance: conceptual filters explain underreporting. *Am J Public Health*. 2002;92:1421–1429.
15. Pransky G, Snyder T, Dembe A, Himmelstein J. Under-reporting of work-related disorders in the workplace: a case study and review of the literature. *Ergonomics*. 1999;42:171–182.
16. American Federation of Labor–Congress of Industrial Organizations (AFL–CIO). *Immigrant Workers at Risk: The Urgent Need for Improved Workplace Safety and Health Policies and Programs.* Washington, DC: AFL-CIO; 2005.
17. Derose KP, Escarce JJ, Lurie N. Immigrants and health care: sources of vulnerability. *Health Aff*. 2007;26:1258–1268.
18. Hitch PJ. Culture, social structure and the explanation of migrant mental illness. *Ment Health Soc*. 1977;4:136–143.
19. Kleinman A, Eisenberg L, Good B. Culture, illness and care: clinical lessons from anthropologic and cross-cultural research. *Ann Intern Med*. 1978;88:251–258.
20. Atkinson P, Coffey A, Delamont S, Lofland J, Lofland L. *Handbook of Ethnography*. London, England: Sage; 2001.
21. Tsai JH. *One Story, Two Interpretations: The Lived Experiences of Taiwanese Immigrant Families in the United States* [dissertation]. Seattle: University of Washington; 2001.
22. Sandelowski M. Focus on qualitative methods: sample size in qualitative research. *Res Nurs Health*. 1995;18:179–183.
23. Chen P. *Modern Chinese: History and Sociolinguistics*. New York, NY: Cambridge University Press; 1999.
24. Morse JM. Determining sample size. *Qual Health Res*. 2000;10:3–5.
25. Agar M, MacDonald J. Focus group and ethnography. *Hum Organ*. 1995;54:78–86.
26. Hammersley M, Atkinson P. *Ethnography: Principles in Practice*. London, England: Routledge; 1995.
27. Muhr T, Friese S. *User's Manual for ATLAS.ti 5.0*. Berlin, Germany: Scientific Software Development; 2004.
28. Chen Y-C. Chinese values, health and nursing. *J Adv Nurs*. 2001;36:270–273.
29. Nestler G, Dovey M. Traditional Chinese medicine. *Clin Obst Gynecol*. 2001;44:801–813.
30. National Restaurant Association. Restaurant industry facts, 2007. http://www.restaurant.org/research/ind_glance.cfm. Accessed October 13, 2007.
31. Wong B. *Ethnicity and Entrepreneurship: The New Chinese Immigrants in the San Francisco Bay Area*. Boston, MA: Allyn & Bacon; 1998.
32. Personick ME. Profiles in safety and health: eating and drinking places. *Mon Labor Rev*. June 1991;19–26.
33. Tremblay GC, Peterson L. Prevention of childhood injury: Clinical and public policy challenges. *Clin Psychol Rev*. 1999;19:415–434.
34. Silverstein B, Evanoff B. Musculoskeletal disorders. In: Levy BS, Wegman DH, Baron SL, Sokas RK, eds. *Occupational and Environmental Health: Recognizing and Preventing Disease and Injury*. 5th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2006:488–516.
35. Bureau of Labor Statistics. *Occupational Employment and Wages, November 2004*. Washington, DC: US Department of Labor; 2005. Publication no. 05-2145.
36. Kharbanda R, Ritchie A. *Behind the Kitchen Door: Pervasive Inequality in New York City's Thriving Restaurant Industry*. New York, NY: Restaurant Opportunities Center of New York and the New York City Restaurant Industry Coalition; 2005.
37. Chrisman NJ. Culture-sensitive nursing care. In: Patrick L, Woods S, Craven R, Rokosky J, Bruno P, eds. *Medical-Surgical Nursing: Pathophysiological Concepts*. Philadelphia, PI: Lippincott; 1991:34–47.
38. Kagawa-Singer M, Kassim-Lakha S. A strategy to reduce cross-cultural miscommunication and increase the likelihood of improving health outcomes. *Acad Med*. 2003;78:577–587.
39. Tripp-Reimer T, Choi E, Kelley LS, Enslein JC. Cultural barriers to care: inverting the problem. *Diabetes Spectrum*. 2001;14:13–22.
40. Brach C, Fraserirector I. Can cultural competency reduce racial and ethnic health disparities? A review and conceptual model. *Med Care Res Rev*. 2000;57:181–217.
41. Powell DL, Gilliss CL. Guest editorial: building capacity and competency in conducting health disparities research. *Nurs Outlook*. 2005;53:107–108.
42. Satcher D. The initiative to eliminate racial and ethnic health disparities is moving forward. *Public Health Rep*. 1999;114:283–287.
43. National Institute for Occupational Safety and Health (NIOSH). *National Occupational Research Agenda*. Cincinnati, OH: NIOSH; 1996.
44. Arcury TA, Quandt SA, Simmons S. Farmer health beliefs about an occupational illness that affect farmworkers: the case of green tobacco sickness. *J Agric Saf Health*. 2003;9:33–45.
45. Brunette MJ. Development of educational and training materials on safety and health: targeting Hispanic workers in the construction industry. *Fam Community Health*. 2005;28:253–266.
46. Thompson SE, Smith BA, Bybee RF. Factors influencing participation in worksite wellness programs among minority and underserved populations. *Fam Community Health*. 2005;28:267–273.
47. Coyne IT. Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries? *J Adv Nurs*. 1997;26:623–630.
48. Tuckett A. Qualitative research sampling: the very real complexities. *Nurs Researcher* 2004;12:47–61.