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HISTORICAL PERSPECTIVE

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The health of restaurant work: A historical and social context to the occupational health of food service

Julia Lippert PhD[1] | Howard Rosing PhD[1] | Felipe Tendick-Matesanz MS[2]

[1]DePaul University, Chicago, Illinois

[2]Collaborative for Health Equity Cook County, Chicago, Illinois

Correspondence
Julia Lippert, PhD, DePaul University, 1110 W. Belden, Chicago, IL 60614.
Email: jlipper1@depaul.edu

Abstract

The United States currently has over one million restaurants, making food service one of the largest workforces and industry sectors in the nation's economy. Historically, concern for the health of early restaurant workers was tied largely to the hygiene of the food and thus the wellbeing of the customer rather than the individuals preparing the food. The landscape of occupational illness and injury that resulted is fraught with some of the starkest health disparities in wages, discrimination, benefits, injuries, and illness seen among US laborers. These disparities have consistently been associated with social class and economic position. Conditions identified during the early years of restaurant work, before the introduction of occupational safety and health protections, persist today largely due to tipped wages, dependence on customer discretion, and the management structure. Research and intervention efforts to control occupational health hazards should be directed toward the socioeconomic and structural roots of health problems among food service workers in the United States. Such efforts have important implications for enhancing worker protections, improving wages, and restructuring working conditions for restaurant and food service workers. They also suggest opportunities for occupational health practitioners and researchers to contribute to system-level change analysis to address centuries-old occupational health challenges still facing one of the largest sectors of workers in the country.

KEYWORDS

food service, kitchen, occupational health, restaurant, service industry, United States

1 | INTRODUCTION

Restaurants differ from traditional industry largely in their unique structure. The introduction of the customer into the employer-employee relationship has had an indirect impact on many aspects of the work including worker success and upward mobility.[1] This relationship is the result of the tipped wage structure that places the consumer in the position of controlling and subsidizing wages. In addition to influencing wages, the consumer impacts the restaurant work environment in the areas of work performance and retention.[2] These influences and others inherent to the restaurant industry determine worker health and must be given historical context to establish how precisely the restaurant work structure has altered the occupational environment and associated health hazards. Indeed, one might argue that some of the conditions and associated health outcomes that appeared during the early development of the restaurant industry continued throughout the 20th century and persist to the present.

The United States currently has over one million restaurants, making food service one of the largest workforces and sectors in the nation.[3,4] Economically, the food service industry is massive, contributing approximately 3% of the Gross Domestic Product.[5] According to the US Department of Agriculture, food service accounted for approximately 36.7% of the "food dollar," or the percentage per dollar consumers spent annually on food. Compared with average consumer spending of 12.6% on retail food expenditures,

people spend nearly three times as much on food eaten out than purchased from grocery and retail stores[6]

The food service industry is defined as bars, restaurants, and cafeterias and includes quick service establishments such as fast food and other specialty food franchises. Currently, there are over 12.5 million jobs in the food service industry with a 14% growth projection, twice the overall projected growth rate.[4,6] Workers in this industry are more female (53.6%) and young (40%). However, worker age is trending upwards with 40% of workers above the age of 24 and a median age of 31.6 years old.[7] Nationally, restaurant workers are mostly white (73.8%), followed by Latinx (25.6%), African American/black (13.6%), and Asian (7.3%). The majority of front of house positions are held by white workers including managers (76.3% white), servers (75.5% white), and bartenders (86.1%); back of house positions are mostly minority workers including cooks (61% non-white) and food preparation workers (49.6% non-white).[4] Within immigrant communities, restaurants are a major employer with 7.1% of foreign born workers employed in food service occupations versus 5.1% of the native born population and 16% of people eligible for the Deferred Action for Childhood Arrivals.[7-9]

Food service jobs range from food preparation to customer service and management and are located in a wide variety of establishments from small rural diners to high end restaurants in city centers. Although the median hourly wage in 2018 was $9.81, totaling $21,801 annually, incomes ranged widely depending on position, with food preparation workers earning about one dollar less per hour than servers and female workers earning on average $7000 less annually than their males counterparts due largely to the lack of women and minorities in management positions.[4] According to the US Census Bureau, in 2018 restaurant and food service jobs were the 267 lowest paying jobs of the 269 industry groups reporting. Not surprisingly, none of the highest paying occupations within the restaurant industry involve service work; those positions are managers, administrators, lawyers, and individuals working to influence legislation.[10]

The goal of this review is to connect the structure of the restaurant to occupational health hazards. The specific objectives are to (a) describe the historical context of restaurants and how the food service industry has evolved over time, (b) review the occupational health literature associated with restaurants and food service work to the present, and (c) identify the structural factors within the restaurant industry that contribute to occupational injuries and illnesses.

2 | HISTORICAL CONTEXT

2.1 | Origins of the restaurant industry

The concept of "restaurant," as understood in Western contexts, dates to 18th century France, derived from a form of public eating largely reserved for elites.[11] French dining originated in "Grande cuisine," an approach to eating for pleasure over sustenance, and one tied to the social class identity of the aristocracy and later that of the emerging bourgeoisie. As Spang notes,[12] "the first restaurateurs did not cater to customers who were hungry and hurried; rather they provided a milieu in which people could make public show of their private sensibility." By the end of the century, restaurants changed to a new model of service to customers. In particular, Spang notes,[12] "seating groups of patrons at their own table, serving meals at unspecified times, and providing a menu from which customers made their own choices. All these elements created the impression that restaurants provide individual and personalized service."

Late 18th century French "Haute cuisine" or high cooking was limited to privileged spaces, luxurious accommodations, and often embedded in art galleries and gardens.[13] Early hotels and restaurants, both words of French origin, were spaces where class identity was defined by patrons served by workers who were socially differentiated themselves between dining ("front house") and kitchen ("back house") staff. The sole purpose of these workers was to orchestrate a performance, an exquisite dining experience that would build the reputation of the restaurateur. The front room was commanded by the maitre d' who assumed the responsibility for organizing servers to ensure an elaborate presentation of the meal. Nevertheless, growth in restaurants with individual tables, customers, and servers had less to do with gastronomy, performance, and appearances than with the volatile political climate leading up to and after the French Revolution.[1] The restaurant "table" became the space for "debates about fairness and equity, questions about finance and food, problems of fraternity and Frenchness."[14]

The French Revolution in 1789 disrupted the aristocratic French way of life that produced Haute cuisine.[14] At the end of the 18th century, while the French masses revolted against the opulent contexts described above, new opportunities emerged for a nonaristocratic capitalist class, the bourgeoisie, or urban merchants and industrialist whose wealth was derived from the production and investment of capital within an expanding global economy.[12] While this group's social class identity clearly differed—sometimes contentiously—from the aristocracy's, the rising capitalist class of the early 19th century integrated "grande cuisine" into a meritocratic social structure where superiority over the working class was articulated through restaurant design and social behavior. These new eating establishments, like their predecessor, carried over elitist, hierarchical structures that emphasized customer service over the health and wellbeing of workers. Mimicking their aristocratic role models, bourgeois restaurateurs often embedded themselves in the most expensive and extravagant hotels in cities. Except for the tavern, which was largely focused on alcohol, eating dinner outside one's residence was not economically feasible among the masses living within the industrializing cities in Europe and the United States.[12] The social class differences between the emerging bourgeoisie elite, with their envy of pre-French Revolution "high" cuisine, and the working class and peasant populations, provided a context for the exploitation of restaurant workers in a growing 19th-century hospitality economy.

2.2 | Working conditions in the United States

The first restaurants in the United States date back to the early 1800s.[11] Like their 18th-century European predecessors, these businesses were primarily for upper class city dwellers. The so-called "front" and "back" of the house dynamic also was imported from Europe into the social structure of US restaurants. Before the early 20th century, very little is known about the impact of restaurant work on the health and wellbeing of this group of workers in the United States. One of the first known reviews of the health impact of restaurant work occurred after the turn of the century by psychologist Amy Tanner in the July 1907 edition of the *American Journal of Sociology*.[15] Tanner and her colleague engaged in an ethnographic study of restaurants by fully immersing themselves as wait staff in a café connected to a fashionable apartment house that served primarily military officers. She provided a window into conditions for workers in the urban restaurant industry. Essentially, she went undercover to look at the effects of restaurant labor on the mind, drawing upon her own experience to advocate for policy reform. She described her typical 13-hour workdays 7 days per week with barely time for meals:

> *We filled a plate with what we could find, and perched on a stool, and gulped the food down amid the sights and smells of dishwashing, with dirty dishes all about us, and the pile of scraps growing bigger every minute as the dish-washer pursued his merry way. Under such conditions, fifteen minutes is a liberal estimate for the time spent in a meal.*[15]

Tanner noted that workers' meals were made up of leftovers and that, given the intensity and number of hours laboring, food was never sufficient. She further described the physical impact of such work:

> *The work itself soon made us lame and bruised from head to foot. The bruises came as the direct result of carrying trays about five hours a day, pushing forcibly through swinging doors, and knocking ourselves against table corners and other pugnacious articles of furniture. All of us could display choice collections of black and blue spots, especially on the right side, since we turned to the right to push through the doors. Our arms ached from finger-tips to shoulders, and our backs and necks were lame from the strain of lifting the trays. Our feet were sore, swollen, and in some cases blistered from being on them so many hours a day.*[15]

The above conditions, Tanner explained, led to physical exhaustion, resentment, a lack of concern for personal hygiene, and, ultimately, forms of resistance while on the job. Resistance did not come, however in the form of organizing, such as for a shorter workday and better conditions. She attributed the lack of motivation to organize to both a fear of losing one's position and a lack of time and physical energy. Tanner exploration reflects an early 20th century, pre-Wagner Act labor rights era when rising concerns about exploitative working conditions were fodder for labor organizing. These conditions, and the suggested negative health outcomes, were not unique to the restaurant where she worked but were ubiquitous and common for many years before and after the study.

One of the earliest studies to document the negative impact of restaurant work on health was published by the New York City Department of Health in 1917. The report, "The Health of Food Handlers," disseminated findings from research underwritten by an insurance agency and the now defunct Museum of Safety.[16] Interestingly, the report's primary goal was "protection of restaurant, hotel, and bakery patrons from communicable diseases." Its secondary stated concern was for the "practical purposes of a hygienic study for a large group of workers subjected to the stresses of their occupations." An insurance agency's interest in the primary purpose of the study seems explainable, given the potential litigious reaction if a restaurant customer contracted illness. The interest of the Museum of Safety offers further insight, however, into the growing state of health and safety concerns in New York during the early 20th century. Such concerns are especially relevant to the time, given that period's lack of regulatory structures in support of worker safety. Grievances by workers over such conditions were perceived as the breeding ground for radical organizing during much of the late 19th and early 20th centuries. The museum not only sought to promote social stability through various forms of engagement with the public on workplace safety, but in doing so focused on and supported societal and national responsibility for the wellbeing of individual workers.

The New York City study followed a 1915 city policy implementing physical examinations of a group classified as "food handlers." This policy was spurred by requirements in many cities to certify food handlers as free of infectious diseases. As part of this process in New York, physicians examined 33 000 workers and reported finding 1980 infectious disease cases among them. The largest percentage (81%) of cases reported was found among restaurant and hotel dining room workers. The examiners of the food handlers were particularly focused on known communicable diseases of the time, including tuberculosis and sexually transmitted infections such as syphilis. In the course of their study, the researchers also diagnosed more than 9.4% of male "waiters" with anemia, compared to 55.8% among female "waitresses," almost six times more than the males. Researchers keenly concluded that poor nutrition was more prevalent in women and, due to the high overall frequency, should be considered an occupational disease.[10] The study neglected to speculate on why such a gender inequity existed in respect to anemia cases, but it may reflect Tanner's experience-based ethnographic observations about women workers with poor dietary options coupled with exhaustion from long hours of intense physical activity in crowded work environments.

The working conditions of restaurants, specifically for women, were the subject of a large study conducted in Illinois during the 1920s. *Women in Illinois Industries: A Study of Hours and Working Conditions*[17] was commissioned by the Women's Bureau of the recently established US Department of Labor. A significant portion of this report focused on the conditions of women working within the

Illinois restaurant industry during a time before regulations on work hour limits established by the United States Fair Labor Standards Act in 1938. When researchers visited 39 restaurants and cafeterias employing 1099 women, one of their primary findings was that 43% of female restaurant workers worked 12 or more hours per day. Moreover, 31% of those studied worked 48 to 60 hours a week, 11% worked 60 or more hours, and the vast majority worked six or 7 days a week.[17] The study documented several cases of crowded workspaces with poor ventilation in cooking areas. Such conditions further illustrate the persistent working conditions reported earlier in the century and correlation with the gendered health outcomes, such as higher rates of anemia among women, found among early 20th-century restaurant workers in the New York City Report.

While the above studies offer a historical window into city- and state-level restaurant working conditions and related health outcomes in two specific locales, a national study published in 1932 provides a broad picture of restaurant work and health at the beginning of the 20th century. The United States Public Health Service (PHS), an office established earlier that century, published *Rates of Physical Impairments in 28 Occupations, Based on 17,294 Medical Examinations*.[18] The report includes the category "Waiter and Hotel Servants" containing more than 28 occupations, 1500 people and an average age of 39. Workers in this category shared similar rates of what were described as impairments, diseases, or symptoms. Two ailments stand out as particularly noteworthy among restaurant and hotel workers. In this group, 27% were diagnosed with "Flat Feet," a number much higher than in all other occupations except Garment Operatives (28%). Additionally, "above average" blood pressure was reported in more than 10% of Waiters and Hotel Servants. This was the highest number by far of all 28 occupations.

The first extensive social scientific study of how restaurants in the United States treat workers was published by sociologist William Foote Whyte in 1948. *Human Relations in the Restaurant Industry* covers a wide variety of contexts within restaurant social relations.[19] Particularly notable is the text's focus on race, a central topic within popular discourse at the onset of the civil rights movement. Whyte's analysis must be understood through the lens of a white sociologist writing about race in Chicago restaurants during the 1940s. His perspective is a classical example of mid-century white sociology that sought to explain race relations without challenging the premise of white superiority itself. The chapter, "Race Relations," describes restaurants in Chicago as places displaying racism within a hierarchical structure and where white workers were clearly given privileges over black workers. The intergroup social relations he described through stories of interaction between black and white restaurant workers suggests a context replete with stress and tension. Working within a highly racialized workplace during the 1940s, as Whyte illustrates in Chicago, likely produced degrees of stress that were manifest in racial disparities in health outcomes among workers where the white management hierarchy exacerbated racial tensions.[19] Not surprisingly, it was difficult to organize collectively and agitate for better working conditions, a topic of the author's subsequent chapter on union organization in which he ignores worker divisions by race.

While Whyte's work can be easily critiqued for its problematic perspective on race, it does shed light on the plight of mid-20th century restaurant labor. It further helps explain the persistence of today's challenges over organizing restaurant workers as well as the aforementioned demographic differences among "front of the house" and "back of the house" restaurant workers. Restaurants in the United States are not only highly decentralized, gendered, and racialized spaces, they also have a high worker turnover rate, recorded as 70% in 2016.[20]

2.3 | Wages and benefits in restaurant work

Early in the history of restaurants, owners embraced the practice of tipping as the primary form of compensating service workers. Tipping reached the United States as an extension of the European practice of tipping servants in private homes. The term tipping is thought to have originated from a London coffee house which had the words "To Insure Promptitude" written on a table to encourage customers to tip.[21] During the early 1900s in the United States, the practice increased as the industries that involved tipping, such as domestic servants, coachmen, barbers, waiters, and railroad porters, also grew. The practice and amount tipped was subject to the same structural discrimination then current. Class, race, and gender all impacted the wages people received from tipping. In 1903, the average salary for black waiters was about 60% of their white counterparts' due mainly to the differential in tip size.[22] Essentially, tipping left much of the servers' livelihood to the will and generosity of the customer.

At the federal level, the tipped wage, also referred to as the subminimum or cash wage, was established as part of a 1966 amendment to the Fair Labor Standards Act (FLSA), which ensured basic protections for workers, including overtime pay and a minimum wage. It extended these protections to the initially exempt service industry employees. However, it also created the tip credit that allowed employers to pay their workers below the minimum wage, relying on customers to pay the remaining value.[23] Originally, the tipped wage was calculated at 50% of the minimum wage. But increases in the tipped wage have lagged behind. The tipped wage was last increased federally in 1991 while the minimum wage has increased 90% since then.[23] The tipped credit now makes up 71% of the tipped wage and tipped workers typically earn less than the minimum wage and are twice as likely to live in poverty.[7,24] Besides lacking benefits such as employer-based health insurance and paid time off (PTO), food service workers are often not paid the overtime rate and experience wage theft, producing substantial wage disparity.[25]

The lack of benefits and PTO in the food service industry stem from a similar regulatory loophole. The Family Medical Leave Act (FMLA) of 1993 established protections for workers or their family members experiencing long-term disability. However, FMLA did not address short-term disability or sick time, making it optional for employers to provide PTO. As a result, only an estimated 35% of people working in service occupations earn paid sick time.[26] Lacking PTO, workers often work while sick and hesitate to report injuries--even those sustained at work—to avoid missing work.[27] Furthermore,

employers with less than 50 full-time employees are exempt from the federal employer mandate requiring employers to provide health insurance. In 2014, only 14.4% of restaurant workers had employer-based health insurance, significantly lower than the national average of 41.9%.[28,29] In addition, restaurant industry workers typically do not have vacation benefits and only a fraction have PTO or sick days, which leads working when ill.[30] Workers without paid sick leave are more likely to forgo care for themselves and their families (odds ratio [OR] = 3.0, $P < .05$; OR = 1.6, $P < .05$, respectively).[26] It is estimated that 12% of food service workers have worked two or more shifts in the past year while sick.[31] However, it is important to note that going to work while sick did not lead to significantly higher odds of food-borne disease outbreak.[32] A significant reduction in mean turnover rates ($P < .05$) was also reported when workers received health insurance benefits.[33]

2.4 | Contemporary efforts to improve working conditions

The United States has a history of organizing as old as the Constitution. Worker-based organizations and organizing followed from a labor movement that took shape and power during the Industrial Revolution. In 1891, the Hotel Employees and Restaurant Employees Union (HERE) was formed. Historically, efforts to unionize—especially led by women—dwindled during the second half of the century.[34] As unionization efforts diminished, sectors that included the restaurant industry—an industry historically difficult to organize—workers were left little institutional power to influence workplace practices and labor policy. Today, the largest group of unionized workers in the US restaurant industry are those who work in hotel or casino food establishments. The largest union for restaurant workers is Unite Here, formed when HERE and the Union of Needletrades, Industrial, and Textile Employees (UNITE) merged in 2004. UNITE-HERE has a membership with over 300 000 working members across the United States and Canada. Unite Here's recent efforts focused on the 2018 Marriott strikes that affected major cities across the nation and resulted in improved standards and protections. The Industrial Workers of the World (IWW) and the Service Employees International Union (SEIU) also have supported work and campaigns addressing workplace conditions at major quick service brands, for example, Burgerville, McDonald's. The IWW has been successful in unionizing Burgerville locations and SEIU continues to support non-union workers of McDonalds for building support to unionize and raise wages for minimum wage workers.

Outside of UNITE-HERE, the second-largest effort to come from workers in addressing working conditions in restaurants has come from worker centers. As outlined by Fine, "worker centers are defined as community-based and community-led organizations that engage in a combination of service, advocacy, and organizing to provide support to low-wage workers."[35] Their collective history reaches back to the 1970s and 1980s and we see some of the first examples of industry-wide organizing in the restaurant industry happening with centers such as the Korean Immigrant Worker Advocates' who were successful in increasing payments of minimum wage in Koreatown in Los Angeles.[31] Other examples of efforts to build work protections led by workers come from a national worker center network, The Restaurant Opportunities Centers United (ROC-United), launched in 2004 as a worker-led movement to "improve wages and working conditions" in restaurant work. Since then, ROC-United has advocated for restaurant worker rights through social campaigns, provided leadership development, and offered legal support winning suits that brought back millions of owed wages to workers.[36] Current efforts from this network have been directed at increasing wages through policy efforts and addressing racism and sexual harassment by creating a "high road" framework by which employers commit to in a means to encourage an industrywide shift. ROC-United also staged a high-profile campaign in multiple US states advocating to remove the tip credit as a structural intervention to add to the efforts to curb racism, sexism, harassment, and wage theft.[37,38]

In addition to ROC-United, the Food Chain Workers Alliance (FCWA), founded in 2009, represents over 300 000 workers within the many sectors of the food chain, including agriculture, processing, selling, and serving.[39] The Alliance utilizes coalition strength to organize around issues such as wages and working conditions that impact workers across the food chain.

While ROC-United and FCWA have become important forces for national activism and organizing restaurant workers, health and safety standards for restaurants are primarily regulated by late 20th-century federal policy. The US Department of Labor's Occupational Safety and Health Administration (OSHA) of 1971 was the product of decades of efforts by government, businesses, and unions to negotiate workplace health and safety standards and, importantly, to enforce them. The agency is charged with enforcing safety and health laws in all workplaces and worker centers and unions have played an important role in ensuring the enforcement of OSHA standards.[40] With the vast majority of restaurant workers not unionized currently as low as 1.4% according to the Bureau of Labor Statistics as of 2018[20]-major concerns remain over how to hold restaurants accountable for promoting fair wages and positive occupational health.

Additionally, employer trade associations have a long-standing history of contributing to restaurant structure and working conditions. In the United States, the contemporary example is the National Restaurant Association (NRA). The NRA is over 100 years old and is the most influential employer association in terms of lobbying, legislation, political campaign contributions, and trade influence.[41] When it comes to organizing workplaces for improved working conditions, the NRA has been a target of much criticism from worker centers and unions alike.

3 | OCCUPATIONAL HEALTH IN RESTAURANT WORK

3.1 | Industry overview

The food service industry is a difficult workplace with long hours spent in cramped, hot, and loud environments by people with low salaries and high turnover.[42] In 2018, injuries in the industry ranked

third overall and fifth for injuries resulting in time away from work.[7] According to the most recent Department of Labor statistics, in 2018 "food service and drinking places" had 2.9 total recordable injuries and illnesses per 100 full-time employees and 1.2 cases per 100 full-time employees that led to time away from work.[43] In terms of quantity, the food services accounted for 275 000 injuries in 2017, the fourth-highest number reported. The incidence of occupational illness was 8.7 per 10 000 full-time employees, lower than the rate across all industries, 12.8, but ranked eighth overall.[7] These rates have been declining after peaking in the late 1980s when eating and drinking places ranked highest in total recordable injuries and illness.[44,45] These figures are an estimate; they do not capture all injuries. This is partly due to the underreporting common in the restaurant industry and to workers' working while sick or injured, which would suggest that these numbers are underestimates and because full-time employment is considered 35 hours or more of work per week, 40% of restaurant and bar workers are considered part-time.[46]

Across all industries, occupational injuries and illness totaled $250 billion in the U.S. in 2017. That included direct costs such as workers' compensation payments, totaling $1 billion per week, and indirect costs for training and replacement, corrective measures, absenteeism, repairing damaged equipment and property, and loss of productivity.[47] When examined by job title, three of the major food service positions were in the top 100 in cost with cooks ranking 19th, waiters and waitresses 42nd, and bartenders 74th.[48] Table 1 shows the specific cost breakdowns. The financial cost values in this table were estimates reported for the years 1985 to 1986. Although in need of updating, they reveal the size of the financial burden they represent.

The major health and safety issues encountered in food service jobs are sprains, strains, bruises, cuts and lacerations, burns, ergonomic

TABLE 1 Summary data of occupational injury and illness by type, exposure, and cost

Nonfatal injury and illness involving days away from work	Total number in 2017 (% of total)[a]	
Total	55 930 (6.3)	
Sprains, strains, tears	12 960 (4.2)	
Fractures	4010 (4.8)	
Cuts, lacerations, punctures	12 190 (13.7)	
Bruises, contusions	4630 (5.8)	
Heat burns	6390 (45.7)	
Chemical burns	140 (4.6)	
Amputations	160 (3.6)	
Carpal tunnel syndrome	180 (3.3)	
Tendonitis	50 (2.1)	
Multiple traumatic injuries and disorders	860 (4.8)	
Soreness, pain	7930 (5.5)	
	Incidence (per 10 000 full-time workers)[a]	
Exposure/event	**Food service**	**All industry**
Total	89.4	77.9
Contact with objects	26.3	23.2
Falls, slips, trips	22.7	23.1
Overexertion and bodily reaction	30	15
Exposure to harmful substance or environment	10.6	3.8
Violence and other injuries by persons or animals	1.1	4
Position	**Total annual cost of illness and injury[b]**	
Total from all occupations	$81 000 000 000 to $173 000 000 000	
Cooks, except short order	$66 711 100	
Waiters and waitresses	$36 629 088	
Bartenders	$19 097 158	

[a]Table R1 from case and demographic characteristics for work-related injuries and illness involving days away from work.[43]
[b]Cost estimates including direct and indirect costs from 1985-1986.[48]

hazards, workplace violence, and stress.[49] The specific injuries and rates can be seen in Table 1. In the "black of house" or kitchen, most of the injuries were sustained during preparation work, with more than twice the risk of injury and the highest probability accidents being cuts, amputations, and punctures due to knives or moving parts.[42] The most prevalent injuries in the "front of house" were ergonomic in nature, derived from carrying heavy loads and awkward body positioning.[49] Young people are most at risk of injury in the restaurant industry.[48] Young people, aged 15 through 17 had food service injury rates 1.7 times higher than injuries reported in all other industries.[50] Forty percent of youth work injuries occurred in restaurants owing in part to a lack of on-the-job training.[51,52]

The length of tenure in the position impacts a worker's health and safety. Persons newly hired are at greater risk of getting injured at work.[53] Workers with less than 1 month on the job were over three times more likely to be injured than someone who had the position for more than a year ($CI_{95\%}$: 3.17-3.25).[54] Turnover in food service is as high as 70% annually, leaving a large portion of the workforce with short tenures.[55,56] Of all the accidents reported in a study of kitchen injuries, 38.4% were suffered by workers with less than 1 year of work tenure.[42] Job satisfaction, as measured through workplace characteristics including creativity, responsibility, potential for advancement, and relationships within the restaurant, was reported at a low level for 50.2% of respondents, an average level for 25.6%, and a high level for 24.2% of participants.[57]

3.2 | Physical hazards

The physical demands of restaurant work result in virtually universal musculoskeletal and ergonomic hazards. The particular work demands of the food service industry such as long periods of standing, carrying uneven loads, and awkward body positions contribute to the discomfort many servers report.[58] Work-related musculoskeletal disorders are common; they were in the top three most reported injuries in the food service industry, with 42% to 84% of food service workers reporting musculoskeletal symptoms.[59-61] Interviews identified musculoskeletal disorders as the most reported causes of pain for restaurant workers.[62] Yet, ergonomic issues in food service work are both under-researched and under-reported.[59]

Same-level falls are another common injury in the industry, primarily the result of slips.[63] Slips and falls are often costly because they result in injuries with high costs of rehabilitation. Overall, they account for half of the annual workers' compensation costs.[64] In restaurants, slips and falls are most commonly attributed to wet floors. The major risk factors for injury from slipping are wet, oily, or otherwise contaminated floor services.[44,65] Rushing and being distracted are additional risk factors.[66] Slips also can affect other hazards, such as the 11% of reported grease burns attributed to slips.[67]

Burns, cuts, lacerations, and punctures are major and costly hazards within restaurant work. In the most recent reports, 17% of all reported cuts, lacerations, and punctures and 57% of all reported burns were sustained in restaurants, even though they only make up roughly 4% of all full-time employees.[20] For the 3-year period 1996 to 1999, 3.8% of all burns admitted to a New York City burn center were from restaurant work and carried a considerable cost burden averaging $3,400 each and an average 12.6 days of recovery.[68] The rate of food service burn injuries is as high as 5.9 per 10 000 workers. In some states, such as Oregon, it is the highest rate reported for any industry.[69] The most likely causes of burns are the spilling of hot liquids and contact with hot cooking oil or hot equipment.[70] Cuts, lacerations, and punctures are typically caused by working with knives and are more prevalent in the kitchen, with 43% of back-of-house employees reporting injury due to cuts as compared to 31% in the front of the house.[60]

3.3 | Behavioral hazards

Rates of certain behaviors that can negatively impact health, such as smoking, alcohol, and illicit drug use are higher in food service than in other industries. In the early 1980s almost 13% of female wait staff and 10% of male wait staff reported smoking more than a pack a day.[71] And although, smoke-free policies have reduced environmental smoke exposure, they have done little to reduce the percentage of smokers in the food service industry, which ranged from 24.5% where smoking was allowed to 29.8% in smoke-free work settings.[72,73]

Drinking in the food service industry is commonplace. A nationwide survey showed that heavy alcohol use was the highest of any occupation, with 15.2% of respondents reporting heavy drinking as opposed to only 8.8% for other occupations.[74] Alcohol use outside work was common. One study found 85.5% of 1294 respondents reported drinking after work and 36.5% of employees reported coming to work hungover.[75] Excessive drinking is normalized in restaurant culture and alcohol's ready availability has been shown to influence consumption and lead to problematic usage. One study showed that workplaces with a drinking subculture and social drinking among coworkers have significantly higher numbers of people with alcohol and drug problems ($P < .05$).[76] After-work socializing with coworkers is significantly associated with the risk of problem drinking, particularly in young restaurant workers between the ages of 21 and 24 (OR = 1.38, $P < .001$).[77] Alcohol use can lead to adverse health conditions. In the early 1980s, the Standardized Mortality Ratio (SMR) for liver cirrhosis, which is a measure of observed deaths to expected deaths, was higher than expected for white male bartenders (SMR = 592), and black female and white female wait staff (SMR = 456 and SMR = 415).[78] Excess alcohol consumption cannot be attributable only to type of work, but the higher prevalence of alcohol consumption may have contributed to the higher mortality rates within the industry.

Illicit drug use is higher in food preparation and serving occupations than in other occupations (OR = 2.78, $P < .001$). Risk of impairment from illicit drug use while working (OR = 2.39, $P < .01$) is also higher in this industry.[79] Results of the Substance Abuse and Mental Health Services Administration survey, which ranked

industries by workers' reported alcohol use, drug use, and substance abuse disorders, ranked the food service industry third highest at 11.8% for reported alcohol use. It ranked first (19.1%) for reported drug use, and first (16.9%) for reported substance use disorders.[80] Substance use disorders were assessed through a series of questions that determined that a person's drug use impacted their health and ability to meet major responsibilities.

3.4 | Psychosocial hazards

The food service industry has been classified as an aggressive environment with a documented abundance of bullying, verbal abuse, sexual intimidation, inappropriate jokes, and teasing.[81] This behavior is often normalized as part of the job.[82] In the kitchen, as high as 22.5% of chefs reported being bullied or harassed.[83] In the tourism industry, which includes hospitality and restaurants, 30% of workers reported "violence, bullying or sexual harassment" in the past 12 months, putting this industry second among other industries.[84] There is a correlation between customer abuse and race, with people of color experiencing higher levels of abuse from customers.[85]

Sexual harassment is more common in low-paying jobs, particularly in the food service industry where more than 170 000 claims were filed with the United States Equal Employment Opportunity Commission (EEOC) from 1995 to 2016. Reportedly 90% of women and 70% of men had experienced some form of sexual harassment.[86,87] More specifically, the US Equal Employment Opportunity Commission reported that restaurant workers have the highest rates of sexual harassment of any industry, with as many as 11 000 complaints filed between 1995 and 2016, or almost 37% of all sexual harassment claims.[87] This number represents only the claims not handled internally. Sexual harassment claims in the restaurant industry often go unreported due to the normalizing of this behavior as "kitchen talk."[86] Women working in sexually objectifying restaurant environments experienced higher than normal levels of burnout, which was associated with receiving unwanted sexual advances ($r = .37$, $P < .05$) and a lack of power within the organization ($r = -.30$, $P < .05$).[88] There is a significant correlation between racial discrimination and reported sexual harassment for black women ($r = .28$, $P < .01$) and Latina women ($r = .39$, $P < .01$), and white women ($r = .28$, $P < .01$).[85] Although the impacts of harassment primarily create a toxic workplace, they can also extend beyond the workplace and negatively affect the victim's interpersonal relationships and wellbeing.[84] Harassment can lead to many adverse health impacts, including increased stress, depression, disrupted sleep, loss of productivity, and bullying.[89,90]

Emotional labor is an important aspect of service work and thus impacts workers. Emotional labor is defined as work done to manage emotions and engage other people in exchange for wages.[91] In the service industry, that translates to satisfying the customer and displaying a positive attitude. In the restaurant industry, where a person's wage is dictated in large part by the customer, this is part of the job. When emotional labor is inherent in one's work, it can lead to social alienation, negative behaviors and emotions, and high turnover rates.[92] Servers are often subjected to aggression from customers and these interactions were reported as occurring several times a shift and were associated with a lack of emotional regulation; externally servers are expected to appear happy and friendly while internally they may be experiencing the opposite emotions, causing exhaustion and burnout.[93] This relationship is aggravated by the entitlement some customers show and their 'servitude perception' which dehumanize service industry workers.[94] Although not specific to the restaurant industry, emotional labor can cause the worker increased occupational stress, decreased job satisfaction, and increased burnout.[95,96] Service industry workers develop coping strategies to protect themselves from these occupational hazards and also to maintain a positive experience for the customer which can lead to productive impacts on their work overall.[97]

Occupational stress in the food service industry can be attributed to excessive workload and staff shortages, as well as long and antisocial working hours and a general lack of job control.[1] The higher the job demands, the greater the job stress; the less control over one's work life, the more job stress experienced ($\beta_{\text{Job Demands}} = 0.19$, $P < .01$; $\beta_{\text{Job Control}} = -0.32$, $P < .001$).[98] The odd work hours such as nights and weekends significantly impact work-life balance as well, creating difficulty in finding childcare and meeting family needs. This ultimately produces less job satisfaction and more occupational stress.[99] A significant correlation with burnout was also found where workers reported feeling overwhelmed and their lives out of control ($r = .605$, $P < .001$). This can impact physical and mental health, leading to headaches, stomach problems, heart attacks, anxiety, job dissatisfaction, and depression.[100]

4 | DISCUSSION

4.1 | Policy implications

The historical working conditions outlined in US restaurants—low wages, lack of benefits, discrimination, and a workplace rife with occupational hazards—persist to this day. The restaurant as a workplace has not changed significantly overtime; nor have structural elements that create and support the working conditions experienced by restaurant workers. Social inequities and related negative health outcomes illustrated within 20th century US restaurant workplace literature continue into the 21st century.[101] As in the past, these inequities are especially prevalent among female workers and workers of color.[102] Thus, to understand and to design effective changes in the occupational health and safety landscape in present day restaurants in the United States, we should view contributing factors through an ecological theoretical framework to recognize the multiple levels of health determinants.[103] Applying an ecological perspective to the occupational health of restaurant work reveals the multiple levels of influence that affect individual health, including policy, community, and organization. The major structural elements reflecting these influences have been identified in this review: wages and benefits, dependence on customer discretion, and management structure and support.

The tipped wage system that persists makes food service one of the lowest paid of all industries, further marked by a significant wage gap by gender and race. White men in the industry typically earn more because they tend to be employed in higher-paying positions such as bartenders and managers, whereas women employed as hosts and wait staff and people of color, typically employed in the "back of the house," earn less.[104] Income is a documented social determinant of health. The nature of restaurant work, including reliance on the tipped wage, lack of PTO and sick days, and regularly required overtime, leaves many food service workers among the lowest of wage earners.[25,105] Waiters are three times as likely to fall under the federal poverty line as the general population; these workers often have difficulty or inability providing for their families.[24,30] The relatively low pay in the fast food industry leads more than half (52%) of these workers to enroll in one or more public programs such as Medicaid and the Children's Health Insurance Program.[24] The precarious scheduling fluctuations means that the majority of food service employees have hours that vary from week to week and wages that vary as much as 50% from 1 week to the next.[106]

With the customer's prominent role in relationship to the wages of a food service worker, considerations for the customer often dominate work activities both physically and emotionally. Restaurant culture's expectation of "fast" service leads to working at a fast and unsafe pace, creating physical strain and fatigue.[55] Servers often put concerns for their customers above their own health, resulting in higher rates of musculoskeletal disorders, particularly in women.[55,107] This is particularly pervasive for servers of color who are tipped significantly less than white servers.[108] After controlling for server skills, gender, and the customers' race, black servers were tipped on average 17% less than their white counterparts. Research finds that tipping may be more related to implicit racial bias than to quality of service since it is typically done without much thought.[28] In fact, a study that included only white participants found positive association with the tipped wage and found it as a source of empowerment, highlighting the disparities in experiences concerning the tipped wage.[109] The structure of the restaurant exacerbates an existing earnings imbalance with service work in which workers who interact directly with the customers receive tips directly while those working in the kitchen and back of the house are "tipped-out" and given only a portion of the overall tips the servers and bartenders receive.[110] This practice contributes to the racial wage gap as discriminatory hiring practices place more people of color in tipped-out rather than direct-tip positions; it can create divisions and tension between workers of differing status.

Wage theft is a commonly cited rights violation in occupations with low wages and precarious employment.[25] In one study, 60% of the 433 restaurant worker participating reported wage theft either by receiving less than minimum wage, not getting paid for overtime, or through pay deductions when sick.[8] Wage theft is also defined as working unpaid during "off the clock" time, not being paid for overtime when working more than 40 hours or 7 days a week, and deductions for damages such as unpaid customer bills or cash register shortages. Although overall figures varied, 77% reported experiencing wage theft in the past year and approximately 33% said they experienced it regularly.[111]

The high levels of abuse and discrimination reported can also be attributed to the nature of the work of satisfying customers. Sexual harassment is seen as "part of the job" and is reinforced by organizations that often ignore or deny incidents and side with customers.[112] Since wages are dependent on customers, customer aggression and harassment are often excused and ultimately normalized and seen as less offensive than similar behavior from a coworker might be. Qualitative analysis showed that people in the service industry experience sexual harassment attributable to the differential power levels that afford the customer a higher status.[85,113] This normalization persists at all levels of the industry where employees are less likely to report harassment when they perceive that the employer organization will ignore or not sympathize with their claims.[114] Almost half the reported incidents came from coworkers and 13% from managers, which prompted respondents to report fear of unfair treatment and consequences for not cooperating with the harassing behavior.[115] When these practices are not addressed, they can lead to other social and occupational hazards. Workplace harassment was shown to significantly and negatively impact the wellbeing of workers experiencing harassment ranging from anxiety, depression, and burnout, to other physical symptoms and job satisfaction.[116]

Finally, the management structures continue to tolerate a lack of workers' rights and inequitable treatment. The ecological model identifies the social and physical aspects of the work environment as better predictors of a person's health than workers' individual behaviors and habits.[103] The results of this review point to the organizational structure of the restaurant as a significant determinant of health. In a secondary data analysis of over 200 managers, turnover was significantly reduced when organizational elements were made transparent and beneficial to the workers, including scheduled raises, bonuses, and wage incentives as well as shift wage differential for workers with less desirable shifts.[33] Conversely, a workplace environment that prioritizes profit over worker health can directly and negatively impact health. Although restaurant workers know little about what they are entitled to through workers' compensation insurance, they have a better understanding of workplace health and safety regulations. This can be explained by the industry's emphasis on a bottom-line focus on the avoidance of costly injuries rather than costly insurance claim payouts.[117] The documented benefits of food service industry training have shown that proper training will reduce turnover, increase the quality of work, and result in higher profits.[118] However, training typically occurs "on-the-job" and both the design and delivery methods need to be improved. Individual level interventions and trainings are typically less effective as they depend on substantial population effort as individuals need to attend the trainings and continue with the recommendations of their own volition.[119] This creates a cycle that culminates in poor managerial practices as well due to a lack of training in supervisory skills, leadership, and communication.[120]

Managerial staff's relationship to servers and kitchen staff can also substantially affect the work environment. Restaurant workers

reported that managerial style can motivate their adherence to operating procedures; when workers feel seen and valued, they are more likely to follow food safety standards.[30] There is a significant correlation between supervisor support and absenteeism and job retention ($r = -.26$, $P < .05$; $r = 0.20$, $P < .05$, respectively).[121] Often, employee satisfaction determines loyalty, which is linked to productivity. Interviews with workers in low-wage occupations, such as food service, revealed that employees ranked their reputation with managers before all else in an attempt to garner more hours and positive recommendations for other jobs.[122,123] Furthermore, from a human resources and policy standpoint, although hiring managers reportedly looked positively at diversity, hiring in practice revealed documented discrimination in hiring people of color, with one study showing that minority applicants were 54% less likely to be offered a position.[124] As recently as the 1990s, the Shoney's restaurant chain of over 1800 locations had an unofficial policy of employing African Americans only if the restaurant was located in a predominately African American area.[125]

4.2 | Practice implications

Employing another principle of the ecological model, all attempts to control the occupational hazards within the restaurant industry should address how the different levels of influence interact, compound, and utilize multilevel change.[103] The findings of the study support this assertion with evidence that contributing factors to occupational health extended to the organizational, interpersonal, and intrapersonal levels. Social and health sciences research also is moving toward multilevel interventions as a standard practice.[126] To date, the most effective campaigns to effect change in the restaurant industry have been through coalitions that united policy level advocates with industry decision makers and individual workers.[127] Restaurant workers have been difficult to organize into a traditional union format, evidenced when comparing the percentage of total unionized food service workers (1.4%) to the national average of that year (10.3%).[128] This is partly explained by the perceived temporary nature of the jobs--many workers do not see unionizing in their long-term interest--but also by the high turnover rates and the precarious nature of the work in which low-skilled workers can be more easily replaced.[129] Thus, coalitions have had success when they are built across the industry but only address one or a few issues. For example, “Fight for 15” pushed for a higher minimum wage and, in turn, addressed the associated, foundational socioeconomic factors, such as poverty and access to benefits and healthcare, issues this review has identified as integral to the occupational and general health of restaurant workers.[130]

4.3 | Research implications

The limited current research needs to be expanded to identify the best policies and practices to address occupational health hazards within the massive restaurant industry, particularly the most salient factors contributing to ill health. Additional research is needed to draw comparisons between types of restaurant structures and their relative impact on workers. Future research should also explore the potential in developing social networks and their influence to change the organizational culture within the restaurant industry. Likewise, what social networks have been shown to perpetuate negative behaviors and beliefs that lead to these toxic work environments? Such efforts have important implications for worker protection, improved wages, and restructuring of the working conditions for restaurant and food service workers. They also suggest opportunities for occupational health practitioners and researchers to contribute to system-level analysis regarding centuries-old occupational health challenges still facing one of our country's largest sectors of workers.

5 | CONCLUSION

This commentary explored the history and contextualized the documentation of occupational health and restaurant work from late 18th century France to contemporary times. We provided an analysis of the negative health outcomes experienced by restaurant workers and their efforts to improve their own working conditions. The weaving together of occupational health research and restaurant labor history underscores the need for future research to be directly informed by restaurant workers and restaurant worker-led organizations. Unions and employee welfare programs have historically been the structures for the protection and promotion of worker health, but they are especially limited within this industry. In turn, protections, compliance, and improved standards such as increases in the minimum wage and increased protections against sexual harassment are driven by restaurant worker-led efforts.

This commentary has limitations. To begin, it should be noted that some of the documented occupational hazards including the excess in negative behaviors such as drinking and alcohol abuse may be attributed to people who exhibit these behaviors selecting occupations in the restaurant industry. As shown in this review, these types of behaviors are normalized and supported within the industry and thus may draw people to this type of work. However, there is a relative dearth of literature and experimental data suggesting a causal connection between these behaviors and the type of work and thus we presented the state of the scientific consensus based on the available literature. Additionally, the demographic and wage breakdown of the restaurant industry demonstrates a tiered population with certain worker populations benefiting from and others hindered by long-standing structural aspects of the restaurant industry. These populations have differing work experiences and thus differing occupational health outcomes and contributing factors. Our focus was on workers at a systematic disadvantage who are at greatest risk for occupational injury and illness and thus most in need of intervention and further study. This focus did not encompass all restaurant workers and, therefore, did not characterize the presumably positive impacts of restaurant work for other segments of the population. Another limitation is the lack of literature regarding positive aspects

of the restaurant industry for worker health. We excluded literature pointing to these positive aspects because of our interest in the aforementioned population and because many of these studies are not peer reviewed and are often published under the auspices of interest groups supportive of a particular policy.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

DISCLOSURE BY AJIM EDITOR OF RECORD

John D. Meyer declares that he has no conflict of interest in the review and publication decision regarding this article.

AUTHOR CONTRIBUTIONS

The work was conceptualized by Drs Lippert and Rosing. All authors acquired, analyzed, and interpreted the data specific to their section of the paper. All authors also participated in drafting and critically revising the documents for intellectual content, and all were in agreement to be accountable for all aspects of the work to ensure that any questions about the work's accuracy or integrity will be investigated and resolved promptly.

ORCID

Julia Lippert http://orcid.org/0000-0002-1751-3668

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