



Discussion paper

Complexity of occupational health in the hospitality industry: Dynamic simulation modeling to advance immigrant worker health



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ABSTRACT

Hispanic immigrant workers, who are heavily employed in low-skill/low-wage lodging and foodservice jobs, work in environments that induce disproportionate health and safety risks. Traditional research approaches have produced only partial insights into the risks of Hispanic immigrant hospitality sector workers, failing to fully capture the underlying dynamic, structural, and systemic complexity of hospitality worker health. This paper has three objectives: (1) to outline the multifaceted and disproportionate health and safety risks of these workers; (2) to introduce a systems paradigm with potential to contribute to more promising approaches in occupational health and safety research in tourism and hospitality; and (3) to elaborate on how computational simulation modeling can fortify occupational health and safety research in tourism and hospitality, and offer a heuristic example of a risk prevention model among Hispanic immigrant hospitality workers rooted in a stakeholder-based system dynamics modeling approach.

1. Introduction

The importance of employee health to the labor-intensive hospitality sector cannot be overstated. Overall injury rates are highest for hotel housekeepers and acute trauma rates are highest in kitchen workers and housekeepers (Buchanan et al., 2010). In addition, turnover rates of the hospitality industry's lodging and restaurant sectors have been increasing over the last several years (56.6% in 2010, 66.7% in 2014, 72.1% in 2015) (Ruggles, 2016). Fortunately, there is growing awareness of the importance of employee health; over 90% of 500 business leaders surveyed believe that promoting wellness can affect employee productivity and performance, as well as employee morale, benefits cost reduction, and safety (HERO, 2015).

Many low-skill/low-wage jobs held by hospitality industry workers require long hours, are physically demanding, pose health and safety risks, and are disproportionately staffed of minorities and immigrants (Lee and Krause, 2002; Marco-Lajara and Úbeda-García, 2013; Sanon, 2014; Watson, 2008; Wial and Rickert, 2002). As the travel and tourism industry experiences continued significant growth, its accommodations

sector remains under pressure from increasing competition, high turnover rates, high profits, low-cost productivity, and seasonal demand (Freedman and Kosová, 2014; Marco-Lajara and Úbeda-García, 2013; Watson, 2008). In response to these pressures, the restructuring, consolidation, and other cost-reducing practices of the accommodations sector (e.g., hiring agency workers on H-2B Guest Worker Visas) (Sanon, 2014) have exacerbated the already endemically poor health of its labor force (Freedman and Kosová, 2014; Lee and Krause, 2002), with pronounced consequences for its immigrant and minority workers (Wial and Richert, 2002). Hispanic immigrant workers in particular, who are heavily employed in low-skill jobs in lodging and foodservice,¹ work in environments that induce an array of disproportionate health risks (Brownell, 2008; Hsieh et al., 2013, 2015a,b; Karatepe and Tizabi, 2011; Ross, 2005), as compared to non-immigrant workers in diverse occupations (Loh and Richardson, 2004; Pransky et al., 2002). Due to the significant size of the Hispanic immigrant population in the U.S., its large presence in the accommodation and foodservice sectors, and due to the significant health concerns of this population, the focus of this paper will be on Hispanic immigrants rather than on immigrant

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¹ Hospitality sector workers may be used interchangeably throughout this paper with lodging, accommodations, hotel, and foodservice workers.

workers in general. It is important to point out that health, labor, immigration, and economic problems are experienced by a number of different immigrant populations (e.g., Asian, Caribbean, Hispanic, African) to different degrees and require research attention; however, the inclusion of all these populations is beyond the scope and focus of this paper.

Immigrant workers' efforts to adapt to ongoing stressors—precarious employment that carries hazardous exposures, weak bargaining power, low wages, and limited health insurance benefits—exacerbated by depressed living conditions related to immigrant status, have contributed to multisystemic physiological dysregulations and associated comorbidities, including obesity, atherosclerosis, hypertension, and cardiometabolic disorders (Ward et al., 2010; Benach et al., 2010; Davies, 2009).

Traditional research approaches, grounded in linear causality and reductionism, have generated fragmented insights into the work conditions of hospitality sector workers (Marco-Lajara and Úbeda-García, 2013) and health risks of Hispanic immigrant lodging and foodservice workers (Krause et al., 2010; Minkler et al., 2010). This is primarily due to the fact that these studies have examined individual pieces of the problem and overlooked interactions among factors while also ignoring the temporal connections and delayed effects of work policies and conditions. Not only have these traditional approaches failed to fully capture the underlying dynamic and systemic complexity of immigrant hospitality worker health, but also their quantitative analytical techniques have been unable to fully describe health risks and identify efficacious interventions. In contrast, approaches that draw on a synergy of systems (Aldrich, 2008; Lich et al., 2013; Lich et al., 2014; Sturmburg and Martin, 2013), syndemic (Singer, 2009), and socioecological theories (Krieger, 2012), that incorporate sociostructural factors in their etiological models (Belkić, 2000; Karasek, 2008; Siegrist, 1996), and that are grounded in dynamic modeling (Sterman, 2000; Byrne and Callaghan, 2013) can provide a framework to explicate risks of Hispanic immigrant hospitality workers, lead to more effective interventions, and potentially alleviate the burden for hospitality and healthcare sectors (Cook and Rasmussen, 2005).

In this paper we: (1) outline the multifaceted and disproportionate health risks of Hispanic immigrant lodging and foodservice workers; (2) propose a systems paradigm that can contribute to more promising approaches for occupational health and safety research in hospitality; and (3) explain how computational simulation modeling, with an emphasis on system dynamics, can help plow new ground in occupational health and safety research in the hospitality sector. Toward this final objective, a heuristic example is offered of a health risk prevention model among Hispanic immigrant hospitality workers that can emerge from a participatory modeling process.

2. How policy and work organization shape hospitality worker health

In developed countries, health disparities are often rooted in interrelated differences in social status, income, ethnicity, nativity, and geography (Peters et al., 2008). In the U.S., immigrants experience a disproportionate health burden compared to non-immigrants (Edberg et al., 2010; WHO, 2016). Hispanic immigrants in particular are faced with excess levels of overweight/obesity, hypertension, cardiovascular disease (CVD), stroke, and diabetes (Edberg et al., 2010). Pronounced occupational health disparities have also been recorded between immigrant and non-immigrant populations, as immigrants working in risk-laden environments (e.g., construction) have been linked with excess injury and fatality rates (Brunette, 2004; Grzywacz et al., 2012a; Grzywacz et al., 2012b). Hispanic immigrants—often found in temporary, hazardous, and low-skill/low-wage jobs—face excess injury and fatality risk, with rates twice those of non-Hispanics (Benach et al., 2010; Loh and Richardson, 2004). In many countries around the world, immigrant seasonal laborers (e.g., agriculture) often fill “3D jobs”

(dangerous, dirty, degrading) that carry high risk for hazardous exposures, injury, and death (Benach et al., 2010), have difficulty accessing care and compensation when injured, and have weak bargaining power to demand better work conditions (Briggs, 2009; CAPIT, 2014; Community Catalyst, 2009; Davies, 2009; Stimpson et al., 2013; Zallman et al., 2015).

About half of the immigrants in the U.S. work in service or blue-collar occupations (Ahonen et al., 2007), a large proportion of whom are undocumented (Rivera-Batiz, 1999; Ennis et al., 2011). Of all undocumented immigrants, 22% are in professional, business and other services (e.g., landscaping) (NCLR, 2011), 18% work in hospitality sector jobs (BLS, 2016) [sector accounts for over 14.3 million jobs in U.S.], and 16% are in construction (BLS, 2016). In fact, more than half of undocumented immigrants are employed in these three sectors combined, compared with only 31% of native-born U.S. workers (Brown et al., 2007). Adverse work conditions and low-skill requirements of lodging and foodservices in particular tend to overwhelmingly attract vulnerable workers, such as immigrants and minorities. Overall, minorities account for more than 60% of hotel and restaurant workers (NCLR, 2011), and Hispanics are found more often than other ethnic groups in hotel housekeeping and foodservice jobs (25.3% of total employed in the U.S.) (BLS, 2016). Additionally, agency-hired workers on temporary contracts—representing a contingent workforce that has grown to approximately one third of the U.S. workforce—serve as a consistent, economical, and accessible labor pool for the hospitality sector (Sanon, 2014) and are at higher risk for occupational injuries (Buchanan et al., 2010; Virtanen et al., 2005).

Shaped by an array of social, immigration, labor, economic, and health policies, low-wage Hispanic immigrant lodging and foodservice workers live and work in stressogenic and pathogenic environments that generate disproportionate health risk (Benach et al., 2010; Edberg et al., 2010; Schenker, 2010). Compared to other occupations, a sizeable increase in occupational stress has been recorded in the hospitality sector over the past 15–20 years (BLS, 2016; O'Neill and Davis, 2011). Low-paying hospitality sector jobs (e.g., lodging, foodservice) are characterized by unfavorable conditions that not only adversely affect workers' health (Hsieh et al., 2013, 2014, 2015a,b; Karatepe and Tizabi, 2011; Ross, 2005; Pienaar and Willemse, 2008; Wial and Richert, 2002) but present serious challenges for human resource management (Marco-Lajara and Úbeda-García, 2013; Watson, 2008). Hotel workers consistently experience physical (e.g., musculoskeletal injuries); chemical (e.g., exposure to toxic cleaning solutions); biological (e.g., exposure to microbial contaminants); and psychosocial hazards (e.g., long/irregular work hours) (Shani and Pizam, 2009; Willemse, 2006), work stress/time pressures (Chiang et al., 2010; EASHW, 2010; WorkCover, 2003), work-home conflict (Hsieh et al., 2008; Kim, 2008; Wong and Ko, 2009), job insecurity (Gautie, 2010), as well as interpersonal conflict and discrimination (Krause et al., 2010). For foodservice workers, these include: physical (e.g., burns from hot oils); chemical (e.g., carcinogens/mutagens found in fumes when preparing foods under high temperatures); biological (e.g., foodborne organisms); environmental (e.g., slippery floors, environmental tobacco smoke, falls, contusions); and psychosocial hazards (e.g., work stress, discrimination) (Tsai, 2009; Tsai and Salazar, 2007; Woo and Krause, 2003). Entrenched in this context, Hispanic immigrant workers are faced with multisystemic physiological dysregulations or excess *allostatic load* (AL) accumulation (Salazar et al., 2016). AL is known to contribute to high levels of overweight/obesity (RWJ, 2014), hypertension (AMA, 2013; Sorlie et al., 2014), and hyperlipidaemia (AMA, 2015), as well as cardiovascular (AMA, 2015), and metabolic (Mattei et al., 2010) diseases in this population (AMA, 2013; Khatri et al., 2013; Beckie, 2012; BLS, 2016; Ennis et al., 2011; McClure et al., 2015).

Allostasis is the body's dynamic regulatory process that maintains physiological stability in response to acute stress, whereas *AL* is the cumulative, multisystemic (metabolic, cardiovascular, and immune)

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