



Review

A review of motivational models for improving hand hygiene among an increasingly diverse food service workforce



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ABSTRACT

Poor hand hygiene is a leading cause for the spread of foodborne illnesses in the foodservice industry. A series of complex motivational interventions must be employed to permanently change the behavior of workers, to increase their compliance and sustain appropriate levels of proper hand hygiene. Unlike the healthcare industry, which uses large, costly multi-modal behavior modification strategies, the foodservice industry must deploy rapid, cost-efficient strategies that take into account a high employee turnover rate and diverse demographics. This paper reviews the current motivational models used in the foodservice industry and examines the habitual nature of complying with good hand hygiene. It also reviews current techniques to increase hand hygiene compliance using clues from three of the five basic senses (sight, hearing, and smell) and two mechanisms (context-bridging and disgust). Lastly, the current model for habit intervention is evaluated, and its possible applications in the foodservice industry with additional reminders are accessed. We believe that this review will provide foodservice managers the background, theoretical basis and practical applications for making long-term changes in their employees on this and similar critical behaviors in foodservice.

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1. Introduction

At the 2011 Global Food Safety Conference in London, Frank Yiannas, Vice President of Food Safety for Walmart USA, ended his plenary remarks with, “*That’s my personal take home message: food safety equals human behavior*” (GFSI, 2011). Yiannas underlined the critical role of motivating and training employees in order to take the safety of our food supply to the next, higher level. It is estimated that companies in the United States annually spend about \$62 billion on workforce training (Bersin, 2013), so the food industry already spends an enormous amount of resources on training their employees. The World Health Organization (WHO) has developed scientifically sound, simple health messages targeting food service employees and consumers in an effort to reduce the world-wide burden of food borne illnesses (WHO, 2012). Among the five key behaviors noted the number one message is to keep the food preparer and the food preparation area clean to minimize cross contamination by pathogens.

In 2011, the Centers for Disease Control and Prevention estimated that there are 9.4 million episodes of food borne illness, 55,961 hospitalizations, and 1351 deaths in the United States each year (Scallan et al., 2011). Hand washing may be the single most important component to significantly reducing the transmission of food borne illnesses (FDA, 2009; Guzewich & Ross, 1999; Green et al., 2007; Lues & Van Tonder, 2007; Todd, Greig, Bartleson, & Michaels, 2008). For example, Olsen, MacKinon, Goulding, Bean, and Slutsker (2000) found that poor personal hygiene of food workers was a contributing factor in up to 38% of food borne illness outbreaks between 1993 and 1997, and Guzewich and Ross (1999) found that pathogens were transferred to food by workers’ hands in 89% of outbreaks caused by contaminated food. A study using self-reported hand hygiene behaviors of food service employees reported that less than 30% of employees complied with the recommendations in the FDA Model Food Code (Green et al., 2005). In another study by Green et al. (2006), basic hygienic practices among food workers were observed in more than 300 randomly selected restaurants across six states. Results showed foodservice workers in these restaurants only attempted to wash their hands one-third of the times when their food contact activities required hand washing. Of these 1/3 attempts, only 27% washed their hands properly. In the 2009 FDA report on the occurrence of foodborne illness risk factors in selected institutional, restaurant and retail store facility types, researchers found that employee noncompliance with proper and adequate hand washing regulations ranged from 27% for elementary school food service employees to 76% for employees at full-service restaurants. These studies and others beg the question of why, after decades of employee personal hygiene training, untold millions of posters and talks by managers encouraging employees to properly wash their hands is the compliance so abysmal?

Proper hand hygiene must begin with properly motivated employees. Unmotivated employees who may possess the correct knowledge but are lax in their hand washing behavior are a major contributor to foodborne outbreaks that lead to making customers sick. Obviously, motivating employees to make long-term behavioral changes is complex. In this review we will briefly discuss the demographics of the retail food service work force. We will then discuss several strategies for implementing behavioral change, especially how habits are formed and what types of motivation produce changes in long term behavior of workers. This review also evaluates sensory cues and cognitive mechanisms that may lead to a development of good hand washing habits among workers with large demographic differences by using basic senses, relating inherent, congruent acts, and leveraging the cross-cultural emotion of disgust.

2. Demographics of the retail foodservice industry

The foodservice industry is the single largest employer of immigrants in the United States (Jackson, 2008). The Hispanic population remains the second largest ethnic group in the U. S., representing 17 percent of the country’s population just behind African Americans (U. S. Census Bureau, 2013). Data from the U.S. Census Bureau also shows that Asians were the nation’s fastest-growing ethnic group in 2012 (U.S. Census Bureau, 2013). These growing ethnic groups are becoming more and more prominent in the U. S. workforce, especially in the foodservice industry (Olsen, 2012). It is estimated that 1.4 million immigrants work in the foodservice industry, accounting for nearly 10% of the entire foodservice labor force (Bendick, Rodriguez, & Jayaraman, 2010). For example, the U.S. Equal Opportunity Commission (2008) reported that 24% of all employees, 25% of service workers, and 13% of first- and midlevel managers for foodservice and drinking places were Hispanic. In addition to documented workers, an estimated 12% of all undocumented workers (a total of 7.2 million) are employed in the foodservice and food preparation occupations (Passel, 2006), where one out of five of these workers are employed as primary food handlers and in food preparation as chefs, head cook, and cooks (Kershaw, 2010).

Although the retail food industry has embraced these immigrant workers, language difficulties present a communication barrier for both employers and workers (Loosemore & Lee, 2001). In fact, U.S. census data show that approximately 46% of foreign-born workers have limited English proficiency and that nearly 73% of immigrant workers with limited English proficiency speak Spanish as a first language (Capps, Fix, Passel, Ost, & Perez-Lopez, 2003; Shin & Bruno, 2003). Larson (2013) agreed that sustained motivation is the key to employees complying with proper hand hygiene requirements. Forming and maintaining an unwavering “habit” of proper hand hygiene could significantly reduce both the morbidity and mortality of foodservice and retail food consumers.

3. Strategies of behavioral change

With the emergence of *Staphylococcal* epidemics in health care settings in the 1950s, the effects of poor hand hygiene in the hospital environment became strikingly evident and started a national campaign to find ways to increase employee hygiene compliance (Mortimer, Wolinsky, Gonzaga, & Rammelkamp, 1966). Many of the early hospital based interventions relied on evidence-based education and repetitive training to increase the rates of hand washing. These types of approaches were shown to initially increase compliance, but were found to be non-sustainable (Boyce & Pittet, 2002; Gould et al., 2007). One study indicated that knowledge interventions that rely solely on knowledge sharing, such as traditional lectures that provided employees information, were ineffective in instituting or sustaining changes in behavior (Evans & McCormack, 2008). Learning behaviorists analyzed the results from many of these failed early training attempts and came to believe that most hand hygiene training failed to prepare employees for on-job barriers to hand washing and help them become active problem solvers (Gould, 2004).

Cognitive theories provided an understanding that employee behavioral change must begin with a consideration of the complexities of compliance, and intervention should focus on the educational, cognitive dimensions preparing the employees for the requirements of employment in the workforce (Larson, Bryan, Adler, & Blane, 1997). However, these techniques might actually discourage employees from washing their hands because a subset of employees viewed the goals of the cognitive training as impractical (O’Boyle, Henley, & Larson, 2001). In light of these failed

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