

The Assessment of Food Safety Practices in Temporary Foodservice Establishments

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ABSTRACT

Temporary foodservice establishments (TFEs) such as farmer's markets, festivals, and roadside stands tend to be more loosely regulated than permanent foodservice operations, in some cases allowing food prepared in uninspected homes or exempting them from formal health department oversight. Due to these gaps in training and oversight, there are increased opportunities for foodborne illness outbreaks, placing the public at an increased risk. This study will use observational techniques in combination with a previously developed observational instrument at three types of temporary foodservice establishments: farmer's markets, festivals, and roadside stands to answer the following research questions; (1) How do observed food handling behaviors and environmental conditions compare to Indiana health department expectations/standards? (2) Are there any relationships between the frequency of malpractices, type of product sold, nature of the operation, and vendor demographics? (3) How do food handling behaviors and environmental conditions differ across the type of temporary foodservice establishments?

Keywords: Food safety, Hand washing, Temporary foodservice establishments, Farmers' market, Foodborne illness

INTRODUCTION

Temporary foodservice establishments (TFEs) are defined as "retail food establishments that operate for a period of no more than 14 consecutive days in conjunction with a single event or celebration with the approval of the organizers of the event" (Indiana, 2009). Farmer's markets, festivals, and roadside stands represent relevant examples of TFEs. They tend to be more loosely regulated than permanent foodservice operations, in some cases allowing food prepared in uninspected homes to be sold to the public, and in other situations, exempting them from formal health department oversight. Sometimes, non-profit establishments staffed by volunteers do not require food handlers to be certified in safe food preparation (USDA, 2009). Due to these gaps in training and oversight, there are increased opportunities for foodborne illness outbreaks, placing the public at an increased risk.

This study will use observational techniques in combination with a previously developed observational instrument (Seo, Miller, & Behnke, 2010) at three types of temporary foodservice establishments: farmer's markets, festivals, and roadside stands. Thus, the following research questions will guide this study:

- (1) How do observed food handling behaviors and environmental conditions compare to Indiana health department expectations/standards?
- (2) Are there any relationships between the frequency of malpractices, type of product sold, nature of the operation, location of the operation, and vendor demographics?
- (3) How do food handling behaviors and environmental conditions differ across the type of temporary foodservice establishments?

LITERATURE REVIEW

The Center for Disease Control and Prevention (CDC) estimated ninety five foodborne illness outbreaks associated with fairs, festivals, and temporary mobile stands from 1998 to 2007 (CDC, 2010). Temporary foodservice establishments face unique issues. Their seasonal nature increases the opportunity for food exposure to unsafe holding temperatures. Moreover, vendors typically sell their products outdoors, exposed to environmental contaminants such as dust, dirt, and pollution. Therefore, it is crucial to examine environmental conditions of temporary foodservice establishments along with food handler's food safety practices.

Farmer's markets were the focus of a recent pilot study aimed at developing an observational tool for documenting employee-related food safety behaviors, specifically hand-washing (Seo, Miller, & Behnke, 2010). Farmers' markets demonstrated rapid growth over the past decade with their economic value estimated to exceed 1 billion dollars (USDA, 2009); however, the regulation of farmers' markets, as well as festivals and roadside stands, tends to be vague.

Various studies have examined employees' food safety behaviors related to food produced in permanent retail environments (Worsfold, Worsfold, & Griffith, 2004). Observation studies have examined the degree to which food handlers adhered to health department standards in terms of handwashing or glove usage using a notational analysis approach (Clayton & Griffith, 2004; Green et al, 2006). Clayton and Griffith's (2004) study assessed caterers' food safety practices by using a notational observation instrument and found that handwashing was detected in only 32% of activities during food preparation, which increased the need for improvement in food workers' handwashing practices.

A recent pilot study modified Clayton and Griffith's instrument, tailoring it for conditions specific to temporary foodservice establishments (Seo, Miller, & Behnke, 2010). While testing of this instrument occurred in farmer's markets, other venues, such as festivals, are also likely candidates for observation, as they often have the same type of temporary foodservice operations. This study proposes applying the piloted observational instrument in an expanded study with the goal of assessing temporary foodservice establishment vendors' food safety practices.

METHODOLOGY

The Consensus Measurement in Hand Hygiene (2009) project noted that the direct observation of handwashing behavior is the "gold standard" of measurement methods. Even though CMHH assessed health care employees' handwashing behaviors, it offered guidance that was useful and applicable for the examination of foodservice employees' food handling practices. The application of CMHH recommendations in conjunction with the experiences

of researchers using notational observation techniques to study handwashing behaviors in foodservice environments (Clayton & Griffith, 2004; Green et al, 2006), guided the observational approach and subsequent instrument development (Seo, Miller, & Behnke, 2010).

Observers will visit various temporary foodservice establishments located throughout Indiana to observe employees' work-related behaviors. Observers will be trained through the use of video-taped scenarios, which will allow for comparison to a pre-determined evaluation of observations. The use of video-taped scenarios will ensure that observer knows what to look for and ensure familiarity with the smart phone based survey instrument. Training in this fashion is expected to help establish inter-rater reliability.

Each vendor will be observed until researchers have recorded a total of 50 transactions. Data will be recorded through the use of smart phones in order to minimize the Hawthorne Effect; the appearance of people texting in public is so ubiquitous that the expectation is that vendor employees will not suspect they are under observation. Collecting data electronically in this fashion will allow documentation of the specific sequence of food handling actions, which will be subsequently coded in accordance with Indiana Health Department standards as to the number and nature of food handling violations. The targeted sample includes vendors offering ready-to-eat foods prepared in temporary foodservice environments for immediate consumption; for example, vendors preparing burgers, kebabs, and sandwiches. Vendors will be identified with a proportionate random sample chosen through the use of a random number generator. Since this study involves human subjects, Institutional Review Board permission will be sought prior to commencing data collection.

Food handling behaviors include proper handwashing, glove use, cleaning or sanitizing equipment, using thermometers to ensure the temperature of foods, and unhygienic actions such as smoking, spitting, and handling money. A rubric for the unique circumstances related to temporary foodservice establishments was reviewed for accuracy by a representative of the Indiana Health Department before subsequent application during the instrument's pilot testing process. While food handling behaviors have been previously studied, little attention has been paid to environmental conditions in temporary foodservice establishments. Therefore, a focus interview will be conducted with an Indiana health inspector in order to obtain the standard of desirable environmental conditions associated with temporary foodservice establishments, for example food exposure and/or food storage conditions. This information will be incorporated into the observational tool for this proposed study.

DATA ANALYSIS

Cohen's Kappa will be used to determine the inter-rater and inter-observer reliability of the researchers' observations and subsequent coding using SPSS. Handwashing malpractices will be compared with the total number of required handwashing opportunities in order to determine the frequency of violations. Descriptive statistics will be used to qualify the nature of the specific markets and vendors. Relationships between frequency of malpractices and vendor demographics will be assessed via regression analysis. Lastly, ANOVA procedures will determine whether food handling behaviors and environmental conditions differ across the type of temporary foodservice establishments: farmer's market, festivals, and roadside stands.

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