

# Compliance With Recommended Food Safety Practices in Television Cooking Shows

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## ABSTRACT

**Objective:** Examine compliance with recommended food safety practices in television cooking shows.

**Methods:** Using a tool based on the Massachusetts Food Establishment Inspection Report, raters examined 39 episodes from 10 television cooking shows.

**Results:** Chefs demonstrated conformance with good retail practices for proper use and storage of utensils in 78% of episodes; preventing contamination (62%), and fingernail care (82%). However, 50% to 88% of episodes were found to be out of compliance with other personal hygiene practices, proper use of gloves and barriers (85% to 100%), and maintaining proper time and temperature controls (93%). Over 90% failed to conform to recommendations regarding preventing contamination through wiping cloths and washing produce. In only 13% of episodes were food safety practices mentioned.

**Conclusions and Implications:** There appears to be little attention to food safety during most cooking shows. Celebrity and competing chefs have the opportunity to model and teach good food safety practices for millions of viewers.

**Key Words:** food safety, food handling, cooking, television, chefs (*J Nutr Educ Behav.* 2016; ■:1-5.)

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## INTRODUCTION

Foodborne illness continues to afflict consumers in the US, with 48 million cases reported each year, resulting in 3,000 deaths.<sup>1</sup> Although over 30 pathogens have been identified as causes of these illnesses, 80% of foodborne illness sources are unknown and agents have not yet been identified.<sup>1</sup> Whereas many known foodborne illness cases are attributed to noncompliance with evidence-based risk factors<sup>2</sup> and nonconformance with good retail practices in food service settings, little is known about the cases of foodborne illness caused by consumer practices at home.

Consumers are increasingly concerned about the safety of the fresh foods they eat and about contracting foodborne illness.<sup>3</sup> Although 8 in 10 Americans report following safe food-handling behaviors, consumers are falling behind in regularly performing food

safety practices. Fewer consumers in 2011 compared with 2008 and 2010 reported washing hands with soap and water before handling food, washing cutting boards with soap and water, cooking to required temperatures, properly storing leftovers, and separating meats and poultry from ready-to-eat foods.<sup>3</sup> In addition, half of Americans do not use a food thermometer and 30% indicate that nothing would encourage them to use a food thermometer. Over half of consumers also do not know the safe internal temperature for their refrigerators to protect most foods from bacterial growth.<sup>3</sup> A similar lack of knowledge about the importance of monitoring refrigerator temperature was reported in a survey of high-risk consumers in which only 34% of respondents reported having a refrigerator thermometer and only 25% reported checking it daily (Slavkovsky C, Cohen N, Brennan Olson R, unpublished data, 2005).

Food safety information and training can inform and help improve consumer food practices. Only 33% of consumers reported that they trusted government officials as the primary source for food safety information.<sup>3</sup> In contrast, over half of Americans said that they trusted media sources for food safety information. Of the 73% of consumers who reported getting their food safety information from media sources, 22% cited cooking shows as their source.<sup>3</sup>

The number of television cooking shows featuring professional and celebrity chefs in commercial kitchens as well as home settings is substantial, with increasing popularity among all age groups. In a recent Harris Poll, 50% of consumers reported watching many of the hundreds of television cooking shows very often or occasionally, with 57% reporting making food purchases based on the shows they watched.<sup>4</sup>

Viewers are attracted to television cooking shows primarily to gain new cooking ideas; the majority of viewers in 1 Australian study reported having prepared a recipe from a show.<sup>5</sup> However, recipes from television chefs tend to be high in calories, protein, fat, and saturated fat,<sup>6</sup> and like children's programming,<sup>7</sup> these televised shows do not model recommended dietary behaviors. Television cooking shows can potentially be an important

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influence on food safety habits of viewers as well. However, little has been shown about food safety practices of chefs and personalities on these cooking shows that may also influence consumer practices. Because 12.6 million Americans work in food preparation and serving occupations,<sup>8</sup> television food shows also reach a considerable number of foodservice employee viewers. Therefore, the purposes of this study were to assess food safety practices in television food shows and to identify whether the food safety practices observed represent positive or negative models for their viewers.

## METHODS

A survey tool with questions about key food safety practices was adapted from the Massachusetts Food Establishment Inspection Report.<sup>9</sup> Practices that could be expected to be seen in a 30- to 60-minute food show were in the survey, including 9 items addressing hygienic food practices, 3 covering the use of utensils and gloves, 5 addressing protection from contamination, and 1 about time and temperature control. In addition, 1 item was included on whether food safety practices were mentioned. Five raters representing state regulators and food safety educators participated in the assessment. The instrument was pilot-tested by the raters, all of whom rated the same episode and tested it for inter-rater reliability (Fleiss kappa of 0.47 = moderate agreement). As a result, rater instructions and 3 questions were modified to improve reliability, resulting in a 19-question survey instrument. The raters were then assigned to watch different episodes of 10 cooking shows representing chef competitions and celebrity shows that used potentially hazardous foods in recipes. Seven of the top television cooking shows<sup>4</sup> were included in this study. The number of episodes per show observed ranged from 2 to 6. A total of 39 episodes were rated and included in the results.

Each episode was rated in or out of compliance for each of the 19 survey items. In was used when the observation was in compliance or conformity with recommended or required food safety practices, as noted on the Massachusetts Food Establishment Inspection Report.<sup>9</sup> Out was used when the observed practice was out of compli-

ance or conformity with recommended or required food safety practices. If a practice was seen multiple times during the show and was out of compliance or conformance  $\geq 1$  times, it was considered to be out. The NA notation was used when a data item or part of the food service operation was not applicable. The NO notation was used when an item was a usual practice in the food service operation but the practice was not observed during the time of the television show. The frequency of compliance rating for each item across all shows and raters was obtained using SPSS statistical software (version 21, IBM Corp., Armonk, NY, 2012). The University of Massachusetts Institutional Review Board noted that this study did not meet the federal regulation definition of human subject research, and therefore it did not require submission to the institutional review board.

## RESULTS

Most of the food practices surveyed were observed in  $\geq 15$  of the 39 episodes viewed (range, 2–33 episodes) (Table 1). Four practices were noted only  $\leq 5$  times: drinking while preparing foods, cuts and sores covered properly, food kept in proper order in the refrigerator, and contamination during food storage.

Adherence to the remaining 15 practices is described in Table 2. Only 4 practices were observed to be in compliance or conformance with recommendations in  $\geq 50\%$  of the episodes; the majority of chefs kept their fingernails clean, prevented contamination during preparation, used clean utensils, and adhered to recommendations regarding eating during preparation.

The majority of practices rated were out of compliance or conformance in  $\geq 70\%$  of episodes (Table 2). Hygienic practices were not uniformly followed, including using clean clothing (70% out of compliance), using a hair restraint (88% out of compliance), handling raw food (91% out of compliance), and washing hands (93% out of compliance). Similarly, few chefs used barriers to ready-to-eat foods and none were in compliance with wearing gloves properly. Cross-contamination recommendations also were not followed in  $> 90\%$  of the episodes with respect to

wiping cloth use and fruit and vegetable cleaning. Similarly, only 2 episodes showed adherence to proper time and temperature rules, whereas food safety practices were mentioned in only 3 episodes.

## DISCUSSION

Overall, television food shows are not modeling recommended food safety practices related to hygiene, proper use of utensils and gloves, protection from contamination, and adherence to proper times and temperatures. Food show chefs practiced certain cross-contamination prevention behaviors similar to the levels practiced by consumers. For example, 62% of episodes followed recommended practices relating to preventing contamination during preparation and 78% used clean utensils, compared with over 75% of consumers who followed similar recommended food-handling behaviors.<sup>10</sup> However, for most behaviors observed, the percentage of shows in conformance with recommended practices was much lower than that seen in restaurant employees and consumers in general. Whereas over 80% of episodes demonstrated recommended fingernail hygiene, one-third or fewer episodes complied with recommended practices regarding clean clothing or use of hair restraints. In contrast, compliance with personal hygiene was high and improving among restaurant workers, with over 75% in compliance in 2008.<sup>2</sup>

Bare-hand contact contributes to 35% of foodborne outbreaks from restaurants<sup>11</sup>; thus, avoiding bare-hand contact, washing hands, and using gloves are critical steps in preventing foodborne illness. Although these are also areas in which foodservice staff compliance is relatively low, compliance by food show chefs is lower than levels indicated in studies of hand washing and proper glove use among restaurant employees<sup>2,12</sup> and hand washing in consumers.<sup>10</sup>

Fruits and vegetables are the leading sources of foodborne illness in the US, exceeding poultry, seafood, beef, and other sources.<sup>13</sup> Washing produce is an important step to prevent contamination and cross-contamination, but  $< 10\%$  of the food shows demonstrated handling produce properly, which was well below the levels seen in consumers.<sup>10</sup> Similarly,  $< 10\%$  of the food

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