RESTAURANT EMPLOYEES' PERCEPTIONS OF BARRIERS TO THREE FOOD SAFETY PRACTICES

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ABSTRACT

Limited research has been conducted to assess employees' perceptions of barriers to implementing food safety practices. Focus groups were conducted with two groups of restaurant employees to identify perceived barriers to implementing three food safety practices: handwashing, using thermometers, and cleaning work surfaces. Ten focus groups were conducted with 34 employees who did not receive training (Group A). Twenty focus groups were conducted with 125 employees after they had participated in a formal ServSafe® training program (Group B). The following barriers were identified in at least one focus group in both Group A and Group B for all three practices: time constraints, inconvenience, inadequate training, and inadequate resources. In Group A, additional barriers identified most often were a lack of space and other tasks competing with cleaning work surfaces; inconvenient location of sinks and dry skin from handwashing; and lack of working thermometers and thermometers in inconvenient locations. Additional barriers identified most often by Group B were no incentive to do it and the manager not monitoring if employees cleaned work surfaces; inconvenient location of sinks and dry skin from handwashing; and lack of working thermometers and manager not monitoring the use of thermometers. Results will be used to develop and implement interventions to overcome perceived barriers that training appears not to address. Knowledge of perceived barriers among employees can assist dietetic professionals in facilitating employees in overcoming these barriers and ultimately improve compliance with food safety practices.

Restaurant Employees' Perceptions of Barriers to Three Food Safety Practices

Introduction

Background

The restaurant industry plays a significant role in the economy of the United States. The estimated 935,000 restaurants in the United States generate $537 billion in sales annually, representing 5% of the gross domestic product (1). Americans spend 47.9% of their annual food budget and consume 76% of their meals away from home (2). An estimated 70 billion meals and snack occasions will be eaten in American restaurants and other foodservice establishments in 2007 (2).

With the number of meals consumed in retail foodservice, assuring food safety should be very important to every restaurant manager and employee. Yet, a report issued by the Electronic Foodborne Outbreak Reporting System (FoodNet) indicated that 59% of reported foodborne illness outbreaks were associated with restaurants in 2005 (3).

Given that the restaurant industry employs 12.8 million people (2), foodservice employees play an especially important role in preventing foodborne illness outbreaks (4). The top three factors resulting in foodborne illness outbreaks: poor personal hygiene, cross contamination, and time/temperature control are all directly related to food handler error (5).

Limited research has been conducted to assess the impact of food safety training on employees' food safety practices (6-8). Previous research has found that food safety training increased knowledge regarding food safety issues (6). However, increased knowledge does not always translate into improved behaviors (7). Factors that have been found to negatively

influence proper food handling practices included time pressures, resources, education and training, and negative consequences (9-12). Research is needed to investigate barriers that inhibit employees from practicing proper food safety.

Purposes

The purpose of this study was to determine perceived barriers to performing three food safety practices: time/temperature control, personal hygiene, and cross contamination. Given that there are several food safety behaviors in these categories, the researchers selected three specific behaviors: handwashing, cleaning and sanitizing work surfaces, and using a thermometer.

Methodology

This exploratory study used two series of focus groups to assess restaurant employees' perceptions of barriers to implementing the three food safety practices at work. The methodology was reviewed and approved by Kansas State University's institutional review board. Group A was composed of restaurant employees who had not completed a food safety class prior to the focus groups. Group B included employees who participated in focus group discussions immediately following a food safety class.

Group A

Population and Sample

Group A was composed of employees whose jobs involved food preparation in restaurants within the same city as the research institution. The convenience sample was selected by contacting all local restaurants and asking the manager to permit researchers to recruit their employees to participate in a food safety focus group. Restaurants contacted were

full-service and quick service restaurants, representing both independent and franchise operations. For those who consented, sign-up sheets for multiple focus group sessions were posted. Restaurant employees were offered $20 in exchange for their participation. A total of 34 employees participated in 10 focus groups. Group A series of focus groups was the pilot phase of this research. This series of focus groups were conducted to identify barriers that employees perceived prevented them from implementing the three selected food safety practices. Results of these focus groups were used to develop measurement items for a survey used in later phases of data collection. Research protocol for using the Theory of Planned Behavior (13) states that it is ideal to have approximately 25 people in the pilot phase of research (14). Thus, 34 participants in this series of focus groups were adequate.

Focus Group Interviews

The purpose of Group A series of focus groups was to identify the most obvious barriers to implementing food safety practices. Prior to the focus groups, participants were given a questionnaire to complete, which contained the questions asked during the discussions. The questionnaire gave employees the opportunity to think about their answers and was intended to improve the quality of data obtained. Two to nine employees participated in each of the 10 focus groups, which ranged in length from 40 to 60 minutes.

Participants signed informed consent forms and completed a demographic survey prior to the discussions. Employees were asked to answer questions based on any job they had held involving food production. Confidentiality of responses was ensured, and participants were informed that only group data would be reported.

The interviewer familiarized the participants with the three food safety behaviors that would be discussed. As each behavior was discussed, participants were asked what makes the

behavior(s) difficult for them (or other employees) to engage in it. The interviewer allowed sufficient time for the participants to contribute to the discussion while another researcher documented the data by taking notes on a blank questionnaire with the focus group questions listed. A response was documented if one person in a focus group stated the barrier. The same researcher who documented the data also coded the focus group data. After the focus groups, the researcher reviewed the data and developed categories of barriers for each behavior. Data were managed by placing similar responses into categories for each behavior and writing those responses on hard copy data sheets. The focus group responses were evaluated independently by another researcher, who also grouped responses into categories for each behavior. Results were compared and differences were discussed until 100% consensus among the two researchers was achieved.

Group B

Population and Sample

The population of Group B consisted of restaurant employees involved in food production within a 300-mile radius of the research institution, including restaurants in Kansas, Missouri, and Iowa. This radius was determined based on funding available to support this project. For recruitment in Kansas and Iowa, a listing of operations licensed to sell food was obtained from the state licensing agency. The telephone directory was used to recruit operations in Missouri given that Missouri does not have a state-wide licensing system. A random sample of 1,298 restaurants was contacted via telephone to request participation in the study. Different sampling pools were used for Group A and Group B; no employees participated in both series of focus groups. Researchers offered managers free food safety training for their employees as an

incentive for participating in the project. If the manager agreed to participate, employees involved in food preparation became part of the sample.

The recruitment period was from summer of 2005 to summer of 2006. A total of 20 restaurants completed this phase of the study. Managers facilitated employees' participation in the training and focus groups. Employees received their hourly wage as compensation for their participation. Restaurants that participated included full service, quick service, and catering operations, representing both independent and franchise operations

Training

The food safety training was a four-hour session, using the ServSafe® Employee Guide workbooks and videos. Trainers were certified ServSafe® instructors. The training sessions included the importance of food safety, personal hygiene, receiving and storage, cooking and holding food, and cleaning and sanitizing work surfaces. Multiple training sessions were scheduled to accommodate the employees' schedules and ensure maximum participation. In some cases, employees from multiple restaurants were trained together.

Focus Group Interviews

The purpose of Group B series of focus groups was to examine more subtle barriers that could be identified by trained participants who had access to the more obvious barriers discussed with the Group A participants. Participants completed a food safety knowledge assessment and demographic survey following training. As stated in the instructions on the questionnaire, return of the completed questionnaire served as informed consent. Employees then participated in focus group discussions. A total of 125 employees participated in one of the 20 focus groups. A larger sample size was utilized in this series of focus groups because we were no longer in the pilot phase of the study. Therefore, all subjects that completed the training participated in Group

B series of focus groups. Participants were given a focus group guide prior to the discussion that contained the same questions asked during the focus groups for Group A. The guide also included all responses from Group A and was designed to encourage participants to identify additional barriers. Participants were able to freely discuss their responses and sufficient time was allowed for participants to respond. The discussions lasted 15 to 30 minutes and were audio recorded by using a digital recorder (Panasonic IC Recorder, Matsushita Electric Industrial Co., Ltd., Kadoma City, Osaka, Japan). Recordings were transcribed by a researcher, who categorized data using the same coding scheme as for Group A. Group B series of focus groups were audio recorded because multiple focus groups with more participants in each group were involved in this phase of data collection. Therefore, there was more data to collect and manage at one time. Audio-recording ensured more accurate and thorough coding of the data. Whereas, Group A series of focus groups were not audio recorded because there were fewer people overall, fewer focus groups in this series, and fewer participants in each group discussion. Group A series of focus groups was a preliminary, smaller-scale data collection. Although the data was coded thoroughly and accurately, it was not as much data to manage at one time. SPSS for Windows (version 12.0, 2004, SPSS Inc., Chicago, IL) was used to organize the categories and responses of Group A and Group B series of focus groups.

Results and Discussion

Group A listed a total of 43 barriers for the three behaviors. Results of Group A focus groups were used to develop an instrument to evaluate perceived barriers to implementing food safety practices that would be used later with a larger sample. Participants listed 15 barriers for cleaning and sanitizing work surfaces, and 14 barriers each for handwashing and using a thermometer (Table 1).

Group B identified a total of 47 barriers: 21 barriers for cleaning and sanitizing, 14 for using a thermometer, and 12 for handwashing. Table 1 summarizes the barriers discussed by Group A and B for all three practices.

The barriers to cleaning and sanitizing work surfaces discussed most often by Group A focus groups were time constraints (mentioned in 10 of 10 focus groups), inadequate training/knowledge (8 of 10), and management and employees don't care (8 of 10). Time constraints (18 of 20), no incentive or desire to perform the practice (15 of 20), and management and employees don't care (13 of 20) were the barriers identified most frequently for cleaning and sanitizing work surfaces by Group B.

The three barriers mentioned most often by Group A for handwashing were time constraints (10 of 10), resources in inconvenient locations (8 of 10), and dry skin (7 of 10). Group B identified the following barriers for proper handwashing most often: time constraints (14 of 20), inadequate resources (13 of 20), and dry skin (11 of 20).

The four barriers mentioned most often by Group A for using thermometers were time constraints (9 of 10), lack of working thermometers (9 of 10), not knowing temperatures (7 of 10), and not knowing how to take temperatures (7 of 10). The four barriers identified by Group B most often included inadequate training (13 of 20), lack of working thermometers (11 of 20), not enough thermometers (10 of 20), and time constraints (7 of 20).

Conclusions and Implications

Barriers that were mentioned by both groups for all three food safety practices were inadequate training, time constraints, inadequate resources, and inconvenience to perform the practices. Given that the current study elicited barriers from both untrained and trained employees, the authors are confident that the present list of barriers is fairly comprehensive and

should be addressed in training programs. Even though this research was conducted with restaurant operations, the results can be used to identify barriers in non-commercial foodservice operations. It is important for registered dietitians (RDs), dietetic technicians registered (DTRs), and foodservice managers to develop programs in their facilities that address these barriers if food safety practices are to improve. Employees would be more likely to improve their food safety behaviors if they perceive fewer barriers to properly performing them. For example, if employees believe that they have enough time to properly wash their hands, they are more likely to wash them.

Most of the barriers discussed in this study do not concern food safety knowledge. Thus, providing food safety training that focuses only on improving knowledge may not assist employees in overcoming barriers. Other studies indicated that other factors needed to be investigated in training programs other than increasing knowledge alone (7, 15).

Managers should ensure that employees receive food safety training on a regular basis. Training should not only focus on increasing knowledge. The results of this research shows that employees list having a poor attitude regarding food safety as a barrier to proper food handling; therefore educating employees about the consequences of improper food handling might improve attitudes toward food safety in general. By realizing the consequences, employees may be less likely to perceive food safety practices as an inconvenience. Signs could be placed in food production areas with persuasive messages about the consequences of not implementing food safety practices. Participants in another study reported that signs in handwashing areas and restrooms were important reminders to employees (15). Managers should also monitor employees' food safety behaviors and encourage all employees to practice proper food safety practices by giving verbal reminders often, being positive role models, and reinforcing

employees' food safety behaviors with verbal praise. It is also important for managers to instruct their employees on proper food safety techniques when they observe employees engage in negative food safety behaviors during their daily activities.

Other researchers have found time pressures to be a factor that influences food safety practices such as washing hands, changing gloves, cleaning cutting boards, checking temperatures, and cooling/reheating foods (9). Training sessions should focus on educating employees that properly performing the practices does not take as much time as perceived (e.g., it only takes 4 minutes for an employee to wash their hands 12 times an hour or it only takes 30 seconds to take the end-point cooking temperature of a food item). Foodservice managers, RDs, and DTRs should incorporate food safety practices into employees' daily routines to eliminate the perceptions that time constraints are a barrier to performing proper food safety practices.

Other researchers have also found that restaurant employees reported that inadequate supplies and problems with access to sinks were barriers to handwashing (15). Managers, RDs, and DTRs should ensure that adequate supplies are kept in inventory so that lack of adequate resources is not a barrier. Inventory should be closely monitored to assure that hand soap, paper towels, thermometers, and cleaning and sanitizing supplies are available so employees can follow food safety guidelines. Participants in another study suggested that having managers more involved in food safety training and making sinks more accessible were factors that promoted handwashing (15).

Results were used to develop and implement interventions for foodservice establishments to overcome perceived barriers that training does not appear to address. Intervention materials included food safety posters that contained "how to" and persuasive "did you know" messages.

Limitations and Future Research

Results can only be generalized to the restaurants in the three states participating in this study. This study only focused on restaurant employees with food production responsibilities. It did not involve other employees such as servers or maintenance staff. It would be interesting to determine barriers perceived by other employees given that these employees also affect the safety of food. It also would be important to investigate barriers perceived by employees who work in other foodservice segments such as healthcare, schools, universities, childcare, and senior living communities. Future research could be conducted with RDs, DTRs, and foodservice managers to assess their perceptions of barriers to following proper food safety practices. The differences in managers' and employees' perceptions of barriers could be determined and specific interventions identified.

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Table 1—Barriers Identified by Focus Group Participants for Three Food Safety Practices

Barrier	Cleaning and Sanitizing		Handwashing		Using a Thermometer	
	Number of Focus Groups Identifying Each Barrier					
	Group A[a]	Group B[b]	Group A[a]	Group B[b]	Group A[a]	Group B[b]
1. Time Constraints	10	18	**10**	**14**	9	7
2. Inadequate Training/Knowledge	8	10	1	8	6	13
A. not knowing consequences of not doing it	6	--	--	--	--	--
B. not knowing how & when to do it	5	--	5	--	7	--
C. not understanding the necessity of it	--	--	3	--	--	--
D. not knowing temperatures	--	--	--	--	7	3
E. not knowing how to calibrate thermometers	--	--	--	--	5	--
3. Forgetting/Having to Remember	2	6	4	2	1	--
A. no signs/no reminders	--	--	3	--	--	--
4. Lack of Adequate Resources	6	4	4	13	--	--
A. lack of space in kitchen	6	2	--	--	--	--
B. lack of cutting boards/utensils	2	8	--	--	--	--
C. lack of people/employees	1	3	--	2	--	1
D. lack of hot water	--	1	--	--	--	--
E. lack of sanitizer	--	1	--	--	--	--
F. lack of enough sinks	--	--	5	--	--	--
G. lack of soap and paper towels	--	--	4	--	--	--
H. lack of working thermometers	--	--	--	--	9	11
I. not enough thermometers	--	--	--	--	--	10
J. no cleaning swabs for thermometers	--	--	--	--	--	2
5. Management and Employees Don't Care	8	13	--	--	1	5
A. other employees criticizing you	--	3	--	--	--	--
B. being told it is not cost effective	--	2	--	--	--	2
C. managers not monitoring	--	**5**	3	1	4	3

D. managers/other employees being bad examples	--	**4**	--	3	--	--
E. not being held accountable	--	**2**	--	--	--	--
6. Competing Tasks	3	7	6	7	2	--
A. impatient guests	1	--	--	--	1	--
B. impatient managers	2	6	--	3	1	--
7. Inconvenient/Hassle/Easier Not to Do	4	4	1	3	3	2
8. No incentive/No Desire to Do It	--	15	--	--	--	--
9. No habit	1	--	--	--	--	--
10. Other						
A. creates more work	--	4	--	--	--	--
B. language barriers	--	1	--	--	--	1
C. resources in inconvenient locations	--	--	8	8	5	2
D. dry skin	--	--	7	11	--	--
E. complicated/hard to read thermometers	--	--	--	--	--	1

[a]Group A: A series of 10 focus groups with 34 employees whose job involved food production from local restaurants.
[b]Group B: A series of 20 focus groups with 125 employees whose job involved food production from restaurants within a 300-mile radius of the research university.