Food Allergy Awareness Training for the Food Service Industry

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Abstract

According to the Center for Disease Control and Prevention, the number of people in the US with food allergies has doubled in the past twenty years. This rise in food allergies has had a growing impact on food service operations. The need for food allergen training for food service workers is evident and now a requirement in the Commonwealth of Virginia. The main purpose of this study was to determine if an instructor-led food allergy training program specifically designed for food service workers could produce an increase in knowledge and potentially a change in behavior that could help to minimize the risk of food allergy reactions in food service establishments. This food allergen training was developed using the Food Hygiene Training Model and the study was based on the Theory of Reasoned Action. The training was conducted January – March, 2018 at multiple food service establishments in southwest Virginia. In addition, a training session was held at the 2018 Virginia Cooperative Extension Winter Conference for Extension Agents that prepare and serve food as part of their programming. Pre- and post-training questionnaires were developed and compared to identify if there was an increase in knowledge, and a program evaluation was completed by all 93 participants. Results revealed that 97% of the participants had an increase in knowledge, 98% felt the training provided them with new ideas they could implement to minimize the risk of food allergy reactions, and 100% indicated that they would recommend this in-person food allergen training to others in the food service industry.

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Food Allergy Awareness Training for the Food Service Industry

Introduction

Background and Setting

Food allergies are a growing public health and food safety concern. According to the Center for Disease Control and Prevention (CDC), the number of people in the US with food allergies has doubled in the past twenty years and it is now estimated that 15 million Americans suffer from this disease (Food Allergy and Research Education, 2016). Food allergies cause approximately 150-200 deaths each year (Food and Drug Administration, 2017) and half of those fatal reactions occur in a restaurant or food service establishment (Weiss and Munoz-Furlong, 2008). In the area of retail food service, the increase in food allergies has had a growing impact. These establishments are responsible to serve their customers, including food allergic customers, safe food.

A key factor in minimizing the risk of food allergy reactions is education. Training food service staff on food allergens and having procedures in place for communication and safe food preparation for food allergic customers is critical for retail food establishments. (Radke, et. al., 2016). Many agree that food allergen training is important (Bailey, et. al., 2011, Choi & Rajagopal, 2012, Dupuis, et. al., 2015, Lee & Sozen, 2015, Radke, et. al., 2016, Radke, et. al., 2017, Wen & Kwon, 2017), and now it is required of all inspected Virginia food service operations (Code of Virginia, 2015). Virginia updated its food regulations in 2016 to include language that defines what the major food allergens are: "milk, egg, fish (such as bass, flounder, cod, and including crustacean shellfish such as crab, lobster, or shrimp), tree nuts (such as almonds, pecans, or walnuts), wheat, peanuts, and soybeans; or a food ingredient that contains protein derived from one of these foods." It also mandates that the person in charge know these

major food allergens and the symptoms of a food allergy reaction as well as ensure employees are trained in food allergy awareness as it relates to their job duties (Code of Virginia, 2016).

Research studies on food allergy training and the food service industry in the US are limited and have focused on the current knowledge of the food service workers or the effectiveness of the current training. One study that focused on restaurant food allergy practices found that approximately half of the surveyed restaurants did not provide food allergy training for their staff and if training was provided it did not cover important information such as what to do if a customer has an allergic reaction (Radke, et, al., 2017). Several of the other studies indicated that the training that was delivered was found lacking or non-existent (Bailey, et. al., 2011, Radke, et. al., 2017, Wen & Kwon, 2017).

Statement of the Problem

There are minimal research studies that focus on the outcomes of food allergy training for food service workers. While it is important that training is provided, it is just as important for food service operations to know if the training is effective in both short and long-term outcomes. In other words, is there a gain in knowledge and if so, could that knowledge bring about positive change in behaviors that will minimize the risk of food allergic reactions in their customers?

Purpose of the Research

The purpose of this research study was to identify if an instructor-led food allergy training program specifically designed for food service workers could produce an increase in knowledge of food allergies and provide guidance on how to safely prepare food for customers with food allergies. The questions guiding this research were the following:

1. What knowledge do food service workers need to have to safely prepare food for customers with food allergies?
2. Does food allergen awareness training increase the food service workers' knowledge of food allergies and safe preparation of food for customers with food allergies?

Objectives of the Research

The food allergy training program for this study was developed based on a valid theoretical model designed specifically for food safety training, the Food Hygiene Training Model (Seaman, 2010). The theoretical basis of the research study was the Theory of Reasoned Action (Fishbein & Ajzen, 1975). The hypothesis of this research project was that a well-designed training program and research based on this model and theory should result in a significant increase in the food handler's food allergen knowledge.

Definition of Terms

1. *Major Food Allergens* - These are the eight food items (milk, eggs, fish, crustacean shellfish, peanuts, tree nuts, wheat, and soybean) identified by the Food Allergen Labeling and Consumer Protection Act of 2004 as being the most common allergenic foods. These eight foods, and any ingredient that contains protein derived from one or more of them are considered major food allergens. These foods account for 90% of all food allergic reactions (Food and Drug Administration, 2004).
2. *Cross Contact* - Cross-contact occurs when one food comes into contact with another food, and their proteins mix. As a result, each food then contains small amounts of the other food. Cross contact can happen between foods contacting each other directly or when a food touches a food contact surface that has been used for another food but has not been properly washed, rinsed and sanitized (Food Allergy Research & Education, 2018).
3. *Food Allergy Reaction* - an abnormal response to a food triggered by the body's immune system (US Department of Health & Human Services, 2018).
4. *Food Establishment* - an operation that stores, prepares, packages, serves, or vends food

directly to the consumer. Examples of such places include but are not limited to lunchrooms, restaurants, cafeterias, coffee shops, cafes, taverns, delicatessens, dining accommodations of public or private clubs, kitchen facilities of hospitals and nursing homes, dining accommodations of public and private schools and colleges, and kitchen areas of local correctional facilities (Code of Virginia, 2016).

5. *FDA Food Code* - a guidance document published by the Food and Drug Administration that assists food control jurisdictions at all levels of government by providing them with a scientifically sound technical and legal basis for regulating the retail and food service segment of the industry (restaurants and grocery stores and institutions such as nursing homes). Local, state, tribal, and federal regulators use the *FDA Food Code* as a model to develop or update their own food safety rules and to be consistent with national food regulatory policy. The *FDA Food Code* is updated every four years (Food and Drug Administration, 2018).
6. *Person In Charge* - the individual present at a food establishment who is responsible for the operation (Code of Virginia, 2016).
7. *Virginia Food Regulations* - the regulations as stated in the Code of Virginia that all food establishments must follow in the Commonwealth of Virginia (Code of Virginia, 2016).
8. *Virginia Cooperative Extension (VCE)* - A network of educational outreach professionals that provide the Commonwealth of Virginia residents with resources in the areas of Agriculture and Natural Resources (ANR), Family and Consumer Sciences (FCS), Community Viability, and 4-H Youth Development. Since 1914 and the passage of the Smith-Lever Act, VCE has operated as the primary in-state outreach service of the

commonwealth's two land grant universities, Virginia Tech and Virginia State University (Virginia Cooperative Extension, 2018)

Review of Literature

The purpose of this literature review was to gain insight on the food safety requirements pertaining to Virginia food service operations related to food allergies and what knowledge is needed in a food allergy training program for workers in this industry. A third goal was to see if training improves food service workers' knowledge of food allergies and their ability to prepare food for food allergic guests.

The Legal Requirements

In recent years, legislation has passed and guidance has been issued on the federal level to address the management of food allergies in the food service industry (FDA, 2009). Several states, including Virginia, have passed laws to include food regulations that address the issue of food allergies (FARE, 2017).

In 2004, the Food Allergen Labeling and Consumer Protection Act (FALCPA) was passed that requires all food manufacturers to clearly label all products to indicate ingredients that are included on the major food allergens list. This requirement helps food service operations to more easily identify allergens that are in the food items they receive from suppliers and inform their allergic customers. Also, at the federal level, in 2009, the Food and Drug Administration (FDA) updated the *FDA Food Code*, a guidance document used by the states to develop their food service regulations, to include statements on food allergies. The FDA added that the person in charge in a food service operation should know the major food allergens and recognize the symptoms of food allergy reactions. The Food Code also states that the person in charge "ensure

that employees are properly trained in food safety, including food allergy awareness as it relates to their assigned duties" (FDA, 2009).

At the state level, during the 2015 Virginia General Assembly, House Bill 2090 was passed and signed by Governor McAuliffe. This new law mandated food safety and allergen awareness training for staff in all food service operations (Code of Virginia, 2015). In order to better align its food regulations to the *FDA Food Code* and to accommodate this recently passed state law, The Commonwealth of Virginia, updated the *Virginia Food Regulations* in 2016. These are the regulations that all Virginia permitted food service operations must follow. In this update, language is now included that defines what the major food allergens are: "milk, egg, fish (such as bass, flounder, cod, and including crustacean shellfish such as crab, lobster, or shrimp), tree nuts (such as almonds, pecans, or walnuts), wheat, peanuts, and soybeans; or a food ingredient that contains protein derived from one of these foods." It also mandates that the person in charge know these major food allergens and the symptoms of a food allergy reaction as well as ensure employees are trained in food allergy awareness as is relates to their job duties (Code of Virginia, 2016). While these regulations are somewhat vague and lack specific guidance on what Virginia food service workers need to know to serve food allergic customers safely, they do specify that training is necessary.

What Food Allergy Knowledge Needs to be Included in Food Service Worker Training?

According to existing research, there seems to be a consensus that food allergen training for those employed in the food service industry is important due to the growing number of patrons that have food allergies (Bailey, et. al., 2011, Dupuis, et. al., 2015, Choi & Rajagopal, 2012, Lee & Sozen, 2015, Radke, et. al., 2016, Radke, et. al., 2017, Wen & Kwon, 2017). However, several of the studies indicate that the training that was delivered was found lacking or

non-existent (Bailey, et. al., 2011, Radke, et. al., 2017, Wen & Kwon, 2017). One study that focused on restaurant food allergy practices found that approximately half of the surveyed restaurants did not provide food allergy training for their staff, and if training was provided, it did not cover important information such as what to do if a customer has an allergic reaction (Radke, et, al., 2017). Of the few studies on food allergen training content, there is general agreement that certain topics need to be included in food allergen awareness training (Bailey, et. al., 2014, Dupuis, et. al., 2016).

In a study to assess restaurant workers' knowledge and practices regarding food allergy management, the researchers reviewed an online food allergen training course developed by the National Restaurant Association and also reviewed printed materials provided by Food Allergy Research & Education (FARE) to come up with seven recommended best practices. These seven distinct steps in food allergy management included "(1) communicating with the patron to clarify the allergy and alert the customer to potentially risky (allergenic) menu items/make recommendations; (2) recording the allergy and/or communicating the customer's needs to other staff; (3) checking all ingredient labels for the presence of allergens; (4) using fresh (uncontaminated) ingredients and/or preparing food away from allergens to avoid cross-contact; (5) sanitizing equipment and surfaces and/or using new or designated allergen-free equipment; (6) cleaning hands and/or changing gloves (or clothing) before preparing food for a customer with allergies; and (7) verifying orders and/or delivering them separately" (Dupuis, et. al., 2016).

Another study conducted in the UK resulted in the creation of an allergen training program for food service workers which focused on similar topics. The results of the study suggested that attendees should be able to: "list the most common food allergens; understand the differences between food allergies and food sensitivities and intolerances; be aware how to avoid

allergen exposure (including use of food labeling policies and avoidance of contamination); recognize the symptoms of severe food allergic reactions and anaphylaxis; respond safely and appropriately if an allergic reaction occurs in one of their customers; communicate effectively with food-allergic customers and their guardians to ascertain their dietary needs" (Bailey, et. al, 2014, p. 26). The study indicated participants appreciated the clarity of the training but suggested that active learning elements should be included in the training to reinforce learning and improve participants' satisfaction (Bailey, et. al., 2014).

Two studies reviewed the educational level of training. A study conducted in the UK investigated restaurant employee food allergy knowledge and any previous food allergy training. It was found that participants desired use of real world examples and simple language (Lee & Sozen, 2016). In an Australian study that engaged with the food service industry to identify food allergy education needs and resources it was suggested that training content should accommodate low literacy (Vale, et. al., 2017).

Creating a unique written plan or procedure that addresses how food allergic special orders are handled for each food service establishment was suggested by a study whose purpose was to understand and identify factors associated with food allergy knowledge and attitudes among restaurant managers, food workers and servers. The researchers found that the knowledge and attitudes of all these staff members were higher at establishments that had a specific person to answer food allergy questions and requests or had a plan in place for answering questions from food allergic customers (Radke, et., al., 2016).

Can a Food Allergy Awareness Training Program Improve Food Service Workers Knowledge of Food Allergies and How to Prepare Food for Food Allergic Guests?

No prior documented research in the US has focused on the outcomes of food allergy

training for food service workers. There was only one study done in the United Kingdom (UK) that documented both initial and long-term outcomes of food allergen training. The researchers observed overall positive outcomes but also admit they had a relatively low participant pool. The study included a training event to equip restaurant staff with the knowledge and skills necessary to safely serve food allergic customers. The study results showed an increase in the percentage of participants who answered true-false questions correctly from eighty-two percent before the training to ninety-one percent afterwards. An increase was also seen in the number of participants that could name at least three of the big eight food allergens from nine percent to sixty-four percent. They also found that the knowledge increase seemed to remain consistent with the attendees. Of the participants that responded to a follow-up quiz four weeks after the training, all were able to answer the true-false questions correctly and name three of the big eight food allergens (Bailey, et. al., 2014). The lack of literature found on the outcomes of food allergy training for the food service industry indicates a need for further research.

Theoretical Framework

Use of theory in a research study can help the researcher explain or predict events, behaviors, and/or situations. Theory and theoretical models can assist the researcher by providing framework and understanding of an expectation or prediction or as a bridge between independent and dependent variables (Creswell, 2014).

The theoretical model used to develop the food allergen training needed for this study was the Food Hygiene Training Model. This model was developed by Phillip Seaman in 2009 and published in 2010. While it includes "various theoretical models and educational theories to recognize the various influences on the training, beliefs, motivations, and conditions required for

food handlers to perform safe food handling practices in the workplace" (Seaman, 2010), it is framed around the Tones Health Action Model and based on the Theory of Reasoned Action.

The Theory of Reasoned Action was developed by Martin Fishbein and Icek Ajzen and was based on the Information Integration Theory (Ajzen & Fishbein, 1980, Fishbein & Ajzen, 1975). The Theory of Reasoned Action goes beyond trying to predict attitudes and includes subjective norms, "the perceived social pressure to perform or not to perform the behavior" in question (Ajzen, 1991, p. 188). This theory suggests that stronger intentions, or a change in attitude, can lead to increased effort to perform the behavior, which also increases the likelihood for the behavior to be performed. Using this theory as its main theoretical base and applying the Tones Health Action Model to food safety education, the Food Hygiene Training Model was developed and is represented in Figure 1. It has been applied successfully in several other food safety training studies (Baines & Soon, 2012, Capriles et. al., 2015, Cunha et. al, 2014). The fact that this theoretical model relates specifically to food safety education and has a solid theoretical base in the Theory of Reasoned Action, makes it a good fit for this food allergen awareness training study.

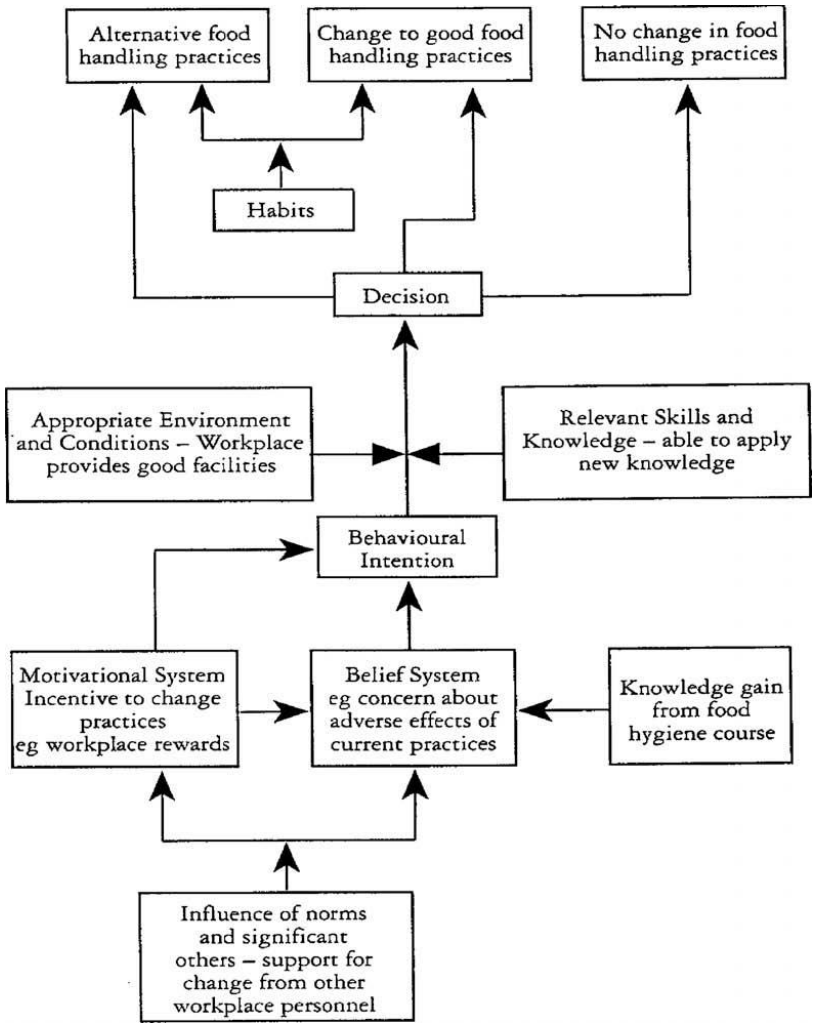

Fig. 1. Tones' Health Action Model Applied to Food Hygiene Education (Seaman, 2010)

The Food Hygiene Training Model indicates that there are several important factors that need to be included in a food safety training study to ensure that the training delivered transfers to the desired food safety behaviors. One is the evaluation, which Seaman says should occur in three stages: A training needs analysis, a knowledge and/or practical skills assessment, and the food handlers' evaluation of the training. Other factors to consider are making the training relevant to the trainee's job, delivering the training in shorter sessions and in a physical and social environment that supports the application of the behaviors that the training is promoting. Lastly, this model encourages the use of certification and competency assessment cards. A

certificate, whether it is an official nationally recognized certification or a certificate of training issued by the trainer, is a written declaration of achievement at a certain place in time (Seaman, 2010). Competency assessment cards could be used by a food service establishment's person in charge to later assess and verify that the food handler is implementing the food safety practices that were taught.

As far as the evaluation stages that this model recommends, the needs assessment for this study was completed and showed that food allergen awareness training for food service workers is not only needed but required due to recent regulation updates (Code of Virginia, 2016). To meet the knowledge/practical skills assessment recommendation, this study included a pre- and post- assessment to gauge if knowledge had been gained in response to the training as well as hands on activities/scenarios that allowed the attendees to apply what they had learned to actual food service job duties. Upon completion, the attendees were asked to evaluate the training by giving their opinion of the content, instructor, length, training environment, etc.

Other issues addressed in the Food Hygiene Training Model are making the training relevant, keeping the training short, and holding the training in an environment that promotes application of the behaviors the training is encouraging. This food allergen awareness training program was designed to be delivered on site in the facility where the attendees work. It was delivered in a little over an hour and included stories and examples that were molded to relate directly to the type of food service operation/audience in attendance. Attendees were given a certificate of training upon completion. Competency assessment cards for specific aspects of the training were offered to the establishment's person in charge to use as follow up verification that the food service workers are actively applying the food allergy knowledge they gained. This

follow up also helps to strengthen and uphold the social pressures, subjective norms, in the facility.

By using the Food Hygiene Training Model as a framework for the development of the training used in this study, it was expected that the food allergy awareness training (independent variable) would result in the attendees' gain of knowledge (dependent variable). In addition, since it was based on the Theory of Reasoned Action, it included subjective norms that encouraged long term application of this knowledge, i.e., a change in behavior. Therefore, the short term outcomes of this study should reveal an increase in food allergy knowledge in the attendees and long term outcomes should minimize the number of food allergy reactions in food service operations due to the application of the knowledge in their daily food preparation activities.

Project Overview

Study Timeline and Participating Audience

The timeline for this study was from January – March, 2018. The main participants for this study were the employees from individual food establishments of all types and varieties within six Southwest Virginia counties: Bland, Carroll, Grayson, Smyth, Washington, and Wythe. The initial recruitment technique was advertising free industry food allergen training to owners/managers of food service establishments that attended other food safety courses currently being taught such as the ServSafe Food Protection Manager Certification training. Another recruitment tool was an advertising postcard (See Appendix E) that was mailed to permitted food establishments within the six counties included in the initial study. Food establishments requesting training for their employees were informed that their employees would be participants in the study. The establishment was also asked to provide a meeting space to hold the training

and agree to the pre- and post- training assessment. Participants that attended were also be asked to agree to participate in the study. In addition to the trainings for food service establishments, a training was also conducted at the 2018 Virginia Cooperative Extension Winter Conference for Extension Agents who are involved in food safety training in other areas of the state and/or prepare and serve food as part of their programming.

Research Design & Procedure

The study was quantitative in method and pre-experimental, one-group pretest-posttest in design (Creswell, 2014). Using the standard notation system developed by Campbell and Stanley, that would be represented by Group A 01-------X-------02 (1963, p. 6). Participants were given a pre-training questionnaire (See Appendix A) and then received food allergen awareness training. The post-training questionnaire was given to the participants after the training was complete (See Appendix B). The questionnaire consisted of 15 multiple choice questions to access the participants' knowledge of food allergens as it pertains to safe food preparation and service as well as 4-5 survey questions that helped to identify the participants' background and opinion on the training. Questions included: Do they have food allergies themselves? Have they had prior allergen awareness training? Did the food allergen training help them to be better prepared to safely serve food allergic customers? Do they recommend this food allergen training to others who work in the industry? Do they have any suggestions on how to improve this training and/or materials? The completed pre- and post- questionnaires were compared in order to assess change in the participants' knowledge of food allergens.

There is no set standard for food allergy training for the food service industry so in order to initially identify the needs and the topics that the food allergy awareness training should include, several resources were reviewed (MenuTrinfo, 2017, National Restaurant Association,

2017, The Food Allergy & Anaphylaxis Network, 2010) in addition to the studies noted in the literature review. Two resources were online training courses: The ServSafe Allergens course published by the National Restaurant Association and the AllerTrain course published by MenuTrinfo, LLC. The third resource was a comprehensive written training program, *Welcoming Guests with Food Allergies*, originally published by The Food Allergy & Anaphylaxis Network in 2001 and updated in 2010. From the review, five main content areas emerged for this training: 1) Food Allergy Overview, 2) Who is Responsible and What it the Law?, 3) Cross Contact, 4) Food Labeling, 5) Communication and Service. Content areas 1-3 defined a food allergy, explained the Major Food Allergens as defined by the Virginia Food Regulations (Code of Virginia, 2016); covered the seriousness and liability of serving food to food allergy sufferers; and identified cross contact and how to avoid it. In content areas 4-5, attendees were informed of food labeling laws and how to read food labels, as well as the importance of clear communication with guests and other food service workers. The delivery format for this training was classroom style via PowerPoint. Also, attendees were given a study guide which they completed during the training that mirrored the slides used in the presentation. After the classroom portion of the training was completed, hands-on activities were conducted. These hands-on activities demonstrated and enforced the information covered in the training, such as preventing cross contact in food storage and identifying foods/menu items that contained one or more of the major food allergens. Training resources such as a food allergen poster (See Appendix C) and follow-up competency assessment cards (See Appendix D) were given to the establishments to help remind and reinforce the information covered in the training. Upon completion of the training, each attendee received a certificate of training. The food allergen training curriculum, materials and activities were reviewed by the faculty advisory committee

and select faculty from the Virginia Tech Department of Food Science and Technology. Approval from the Virginia Tech Institutional Review Board was also obtained.

Summary of Outcomes, Discussion, and Recommendations

Research Outcomes

Ninety-three people completed the food allergen awareness training over the three-month period. The attendees represented multiple types of food service operations including full service, quick service, childcare, and healthcare food establishments. In addition, the training was presented to a group of Extension agents involved in food safety training throughout the Commonwealth and/or prepare and serve food as part of their educational programming.

The mean scores for the pre-training assessments and a post-training assessments were calculated and 97% of the attendees showed an increase in knowledge. For the 3% that did not show an increase, the assessment score stayed the same. The average score increased from 70% on the pre-training assessment to 89% on the post-training assessment.

To further evaluate a gain in knowledge, a paired-samples t-test was conducted using matched pre-assessment and post-assessment data sets (significance set at $p < 0.05$). There was a significant difference in the mean scores for the pre-assessment scores (M=10.51) and the post-assessment scores (M=13.16); $p= 3.6^{-27}$.

The program evaluation survey completed by the attendees after completing the training indicated that 100% felt the training helped them be better prepared to safely serve their customers with food allergies. Ninety-eight percent of the attendees responded that the training provided them with ideas they could implement in their establishment to help improve their food preparation procedures for food allergic customers. One-hundred percent indicated that they would recommend the in-person training program for others in the food service industry.

Research Discussion and Recommendations

The statistical significance of the difference in the pre-assessment scores and the post-assessment scores indicates this training effectively increases food handlers' food allergen knowledge. Additional surveys should also be developed to determine if longer-term changes occur in food safety behaviors within three months and six months after the training.

The response from the attendees of the training was positive. Many attendees commented that the in-person training allowed them to ask questions and have discussions that an online curriculum did not offer. Having the training onsite at the food establishment created a more comfortable and friendly environment where the attendees felt they could comment or ask questions. Employers indicated that they appreciated the simple and succinct format of the training that kept their payroll expense to the minimum as well as well as the competency assessment cards that would allow them to follow up with employees to encourage long-term behavior change.

This curriculum should be a program resource for other Virginia Cooperative Extension agents that offer food safety training. This will enable the Virginia Cooperative Extension to educate food service workers across the Commonwealth and help food establishments meet or exceed the recently updated Virginia Food Regulations. The program should be reevaluated at regular intervals in order for it to be updated to include new food allergy research and findings.

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Appendices

Appendix A – Pre-Training Questionnaire/Survey

Name (Please print neatly) _____

Directions: Read each question/statement and circle the correct answer. There is only one correct answer for each question.

1. A mild symptom of a food allergy would include:
   a. Loss of consciousness
   b. Hives, itching, or skin rash
   c. Trouble breathing
   d. Irregular pulse

2. Cross-contact is defined as:
   a. The immune system's chemical response to a food allergen
   b. Cooking food to improper temperatures
   c. Transferring disease-causing organisms from one surface to another
   d. Two foods touching and their proteins mixing

3. Which of the following would not be considered one of the Big 8 Food Allergens?
   a. Beef
   b. Tree nuts
   c. Eggs
   d. Milk

4. Which of the following is a correct description of a food allergy to dairy?
   a. Lactose intolerance
   b. Dislike for dairy
   c. Digestive upset from dairy
   d. An immune system reaction from dairy

5. Which component of food is responsible for an allergic reaction?
   a. Protein
   b. Carbohydrate
   c. Fat
   d. Moisture

6. Allergens have the potential to be transferred through contact with
   a. Aprons
   b. Hands/Gloves
   c. Wiping cloths
   d. All of the above

7. Which of the following would not be an effective way to distinguish an allergen-free plate of food?
   a. Use a different color plate
   b. Double plate the dish
   c. Place a flagged toothpick on it
   d. Depend on the server to remember which dish is allergen-free

8. To help prevent cross-contact of an allergen special order, the server should:
    a. Carry the plate to the guest by hand
    b. Add garnishes to the plate by hand
    c. Include all sides and sauces on the plate
    d. Carry all meals to the table on one tray

9. William is a customer with a peanut allergy. He orders a slice of your World-Famous S'mores Brownie Pie. A scoop of peanut butter ice cream is accidentally added to the pie plate. How should the server handle this order?
    a. Serve it to the customer with the extra ice cream
    b. Use designated allergen-free tongs to remove the pie from the plate, wipe any ice cream off the plate with a clean towel, place the pie on the plate, and serve
    c. Place a new slice of pie on a new plate, and serve
    d. Scrape the ice cream off the plate, wipe off the pie with a paper towel, and serve

10. If your facility has only one grill to prepare allergen-containing and allergen-free orders on, what would a good method be to avoid cross-contact?
    a. Grill the allergen-free order first
    b. Scrape the grill before preparing the allergen-free order
    c. Use foil to act as a barrier to separate allergen-free orders from the grill's surface
    d. Heat kills allergens, therefore cross-contact cannot occur on grills

11. If there are secret ingredients in your food recipe, you are required to:
    a. Identify only the ingredients in the recipe that are allergens
    b. Reveal all of the ingredients used in the recipe
    c. Reveal none of the ingredients used in the recipe
    d. Ask the customer to order a different menu item

12. You know Tony has a severe milk allergy. He accidentally ingests milk and is having an allergic reaction, what should you do first?
    a. Call 911
    b. Find an epi-pen
    c. Watch to see if Tony has an allergic reaction
    d. Bring Tony a glass of water

13. The phrase "**May Contain**" on a food label indicates:
    a. A small amount of a Big 8 allergen is present in the food
    b. An allergen may have accidentally entered the food product during processing or preparation
    c. An unknown allergen is present in the foods
    d. The recipe for the food is constantly changing

14. What allergen information does the following food label provide?

> Ingredients: ROASTED PEANUTS, SUGAR, LESS THAN 2% OF HYDROGENATED VEGETABLE OIL, SALT, PARTIALLY HYDROGENATED COTTONSEED OIL
> **CONTAINS: PEANUTS**

    a. Peanuts may have accidentally entered the product
    b. Peanuts are the only Big 8 allergen present in this product
    c. Peanuts and Cottonseed Oil are the Big 8 allergens present in this product
    d. This product is free from allergens since the label says the peanuts were roasted

15. Adam is getting ready to cook an order of chicken nuggets for a customer with a shellfish allergy. He also must prepare an order of fried shrimp. Adam should:
    a. Cook the chicken in the same oil he uses for fried shrimp, just at different times
    b. Cook fried shrimp and chicken nuggets together to save time
    c. Cook the shrimp, cool the oil, reheat the oil, then cook the chicken
    d. Use a separate fryers and separate cooking oils for the chicken and shrimp

Pre- Training Survey

1. Do you have food allergies? Yes or No

2. Do you know someone (family, friend, acquaintance) with food allergies?

Yes or No

3. Have you had to deal with serving someone with food allergies in your operation?

Yes or No

4. Does your operation have a food allergy standard operating procedure?

Yes or No

If yes, are you confident you understand how you are supposed to prepare & serve your food allergic customers? Yes or No

5. Have you ever had any training specifically on food allergies and safe food preparation? Yes or No

If yes, please describe.

_____

_____

_____

_____

Appendix B – Post-Training Questionnaire/Survey

Name (Please print neatly) _____

Directions: Read each question/statement and circle the correct answer. There is only one correct answer for each question.

1. A mild symptom of a food allergy would include:
   a. Loss of consciousness
   b. Hives, itching, or skin rash
   c. Trouble breathing
   d. Irregular pulse

2. Cross-contact is defined as:
   a. The immune system's chemical response to a food allergen
   b. Cooking food to improper temperatures
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6. Allergens have the potential to be transferred through contact with
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7. Which of the following would not be an effective way to distinguish an allergen-free plate of food?
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   c. Place a flagged toothpick on it
   d. Depend on the server to remember which dish is allergen-free

8. To help prevent cross-contact of an allergen special order, the server should:
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    a. Call 911
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    a. Cook the chicken in the same oil he uses for fried shrimp, just at different times
    b. Cook fried shrimp and chicken nuggets together to save time
    c. Cook the shrimp, cool the oil, reheat the oil, then cook the chicken
    d. Use a separate fryers and separate cooking oils for the chicken and shrimp

Post-Training Survey

1. Did this training help you to be better prepared to safely serve customers with food allergies? Yes or No

2. Did this training give you ideas on how to improve safe food preparation for your customers with food allergies? Yes or No

If yes, please share one or two ideas:

_____

_____

_____

3. Would you recommend this training to others in the food service business?

Yes or No

4. Do you have suggestions on how to improve this training and/or the materials?

Yes or No

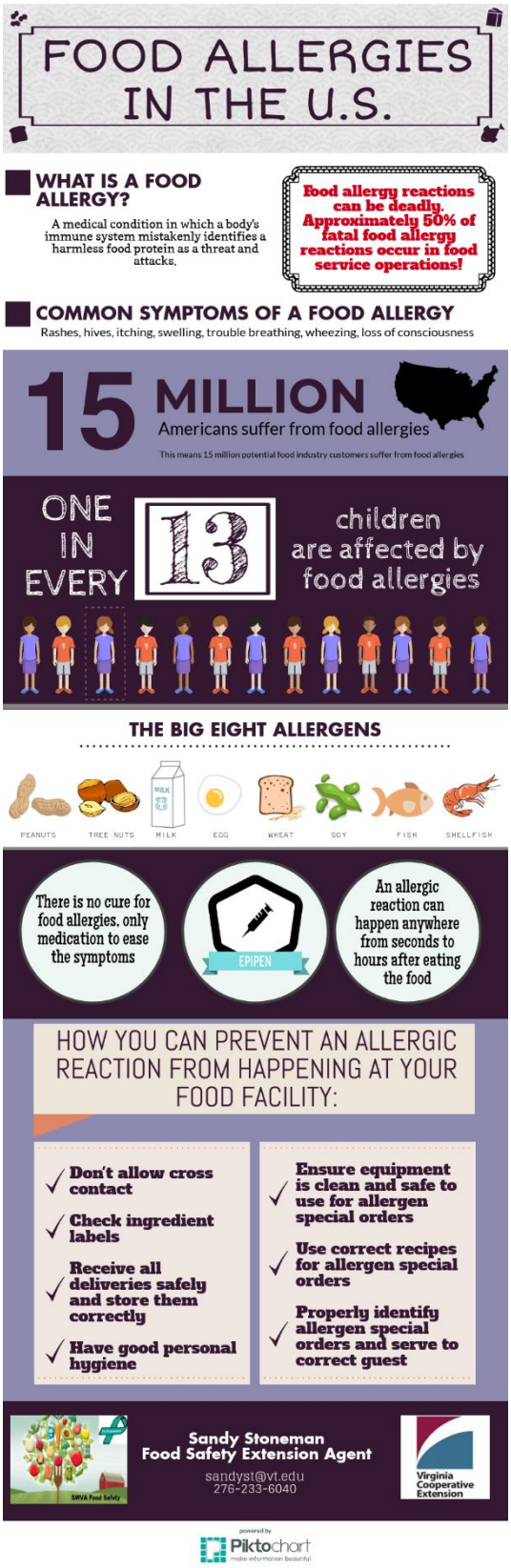
If yes, please describe:

_____

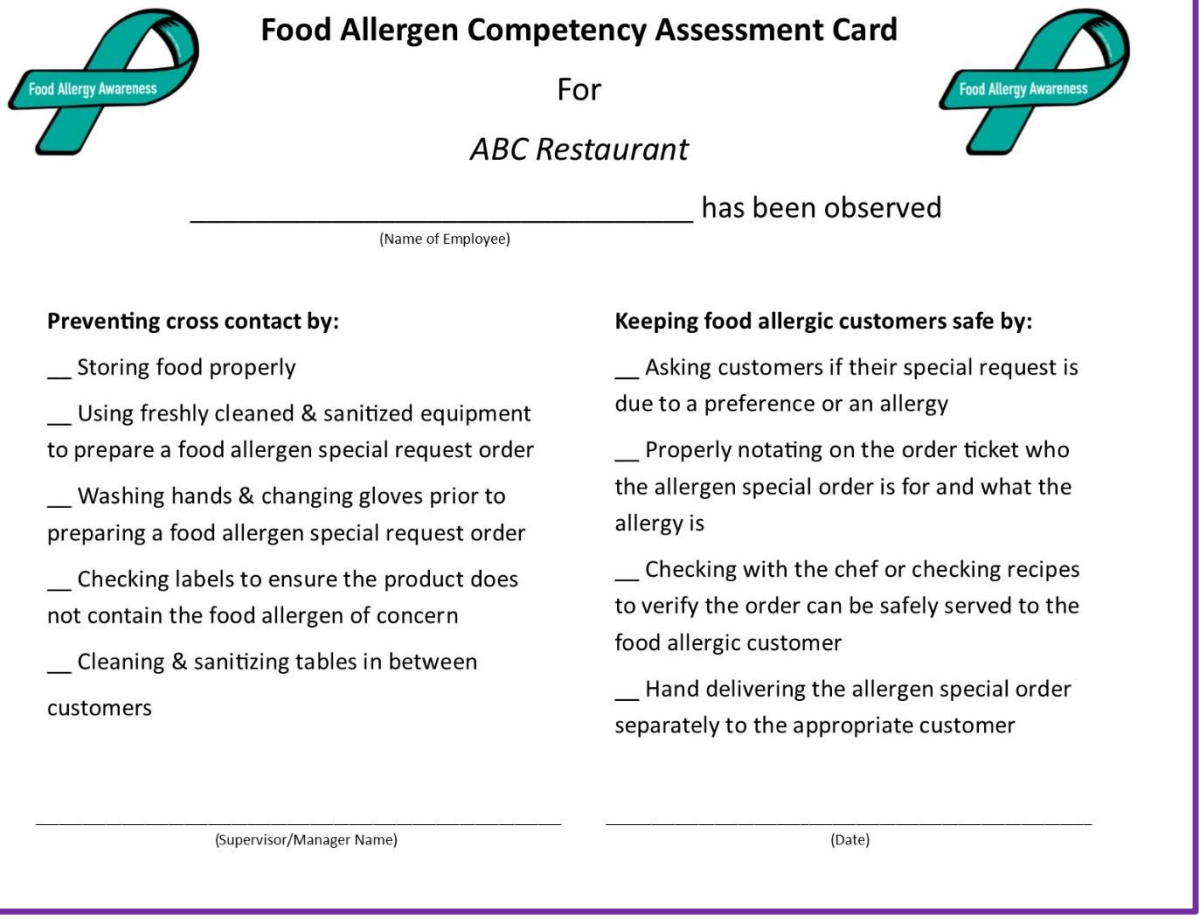
_____

_____

Appendix C – Training Poster



Appendix D – Food Allergy Competency Assessment Card



Appendix E – Food Allergy Training Marketing Postcard

Postcards: Front side

Postcards: Back side

Appendix F – Food Allergen Training Certificate of Completion

Virginia Cooperative Extension
Virginia Tech • Virginia State University

&

Recognizes that

First, Last

has successfully completed official

Food Allergy Awareness Training

For the Food Service Industry

Date of Training: Month Day, Year

Sandra Stoneman, REHS, CP-FS
Instructor Name - Print

Sandy Stoneman
Instructor Name - Signature

Sandy Stoneman | Food Safety Extension Agent | 276-223-6040 office
sandyst@vt.edu | www.swvafoodsafety.org & www.facebook.com/swvafoodsafety | 276-613-3334 cell