teaching note

Salmonella Outbreak at a Hotel in North Carolina[1]

Summary

This case study aims to generate classroom discussions about the importance of food safety issues in the foodservice industry. In particular, this case study is about a salmonella outbreak at a hotel in North Carolina in 2013. About 100 individuals showed salmonella symptoms such as diarrhea, fever and abdominal pains after eating at the hotel's one of the food outlets and eight of them were hospitalized. Several lawsuits were filed in connection with this outbreak. The case study explains how the salmonella outbreak started at this hotel and how many people were infected and subsequently hospitalized. The case study offers conclusions and discussion questions.

Teaching objectives and Learning outcomes

This case study aims to generate classroom discussions about a foodborne outbreak at a hotel in North Carolina. The case study particularly aims to (1) define a foodborne disease outbreak, (2) explain how widespread foodborne diseases are in the United States, and (3) discuss their actual causes. It also aims to provide specific recommendations on how to eliminate or reduce the risk of foodborne diseases and how employees and managers should be trained.

By studying and discussing this case study, students should be able to:

- Define a foodborne disease outbreak.
  - Provide evidence on how widespread foodborne diseases are in the United States.
  - Explain the potential causes of foodborne disease out breaks, including salmonella outbreaks.
  - Provide recommendations on how foodborne diseases can be eliminated or reduced.
  - Discuss the role of training in managing food safety in food service businesses.
  - Provide recommendations for foodservice businesses about what to do if and when they face a possible foodborne outbreak.

Target audience

Target audiences for this case study include undergraduate and graduate students who study food safety, nutrition, restaurant management, lodging operations and case studies in restaurant management or lodging operations. This case study may be used in industry or company workshops on food safety in foodservice businesses for employees and managers.

Teaching strategy and approach

Prior to Class

Prior to class, students should be asked to read: (1) the case study, (2) the attached brief review of theoretical concepts (Appendix 1) and (3) the four tables from the CDC website (See Appendix 2 for links for the tables). After reading these suggested documents, students should be able to discuss the following questions/topics:

- Describe the case study.
- Define a foodborne disease outbreak.
- Provide evidence about how widespread foodborne diseases are in the United States.
- Explain the actual causes of foodborne diseases.
- Explain the actual sources of the salmonella outbreak at the case study hotel.
- Explain the symptoms of salmonella outbreak.
- Provide recommendations on how foodborne diseases can be eliminated or reduced.
- Discuss the role of training in managing food safety.
- Provide recommendation on how foodborne outbreaks impact a foodservice business.

Class Instruction (3 hours instruction time and/or 150 minutes teaching time)

Phase I: Introduction (20 minutes)

1. Introduction and learning outcomes (10 minutes).
2. Asking students to share their personal experiences of any foodborne illnesses (10 minutes).

Phase II: Open Case Study Discussion (30-35 Minutes)

3. An open discussion on the case study. What happened and why? (20 minutes).

Phase III: Discussion on Foodborne Illness Outbreaks (40-45 minutes)

4. Put students into small groups (3-4 students) and ask each group to prepare answers for the topics listed below. Depending on the number of students in your class, you can alternatively assign each group one or two topics. Give the class (all groups) about 10 minutes to prepare their answers for their topics and have a general class discussion

1 The actual name of the case study hotel is disguised. Published materials and academic sources were used in preparing this case study. It was written for the purposes of classroom discussions. It was not intended to show effective or ineffective handling of decisions or a managerial situation. Foodborne disease outbreaks are common in the foodservice industry. As noted in the case study, the case study hotel fully cooperated with the local and state officials and worked hard to control the outbreak, which was declared over in June, 2013.

about 10-15 minutes covering all these topics (20-25 minutes):

- Define a foodborne disease outbreak.
- Provide evidence about how widespread foodborne diseases are.
- Explain the symptoms of salmonella outbreak.
- Explain potential sources of a possible salmonella outbreak.
- Provide recommendations on how foodborne diseases can be eliminated or reduced.
- Discuss the role of training in managing food safety.
- Provide recommendation on how foodborne outbreaks impact a foodservice business.

5. Depending on avaiability of time, you can show the following video: http://www.youtube.com/watch?v=68_BYmof3GA
6. Similar videos can be found available online on this topic (about 20 minutes).

Phase IV Closure (20-25 minutes)

7. Offer a short lecture with participation on food safety by using the brief review provided in Appendix 1 and Tables listed in Appendix II.
8. Summarize key issues and concepts covered during the session.
9. Have a Q&A session including discussions on possible test questions.

References and additional reading

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Appendix 1

A Brief literature review on food safety

Introduction

This section provides a brief literature review on food safety in foodservice businesses. It defines FBDOs and provides statistical information about how widespread FBDOs are in the United States. Following this, it discusses causes of FBDOs and how they can be eliminated and reduced. The paper discusses the importance of training on managing food safety. Finally, conclusions and recommendations on food safety in foodservice businesses are provided.

What is a foodborne disease outbreak?

A FBDO refers to "an incident in which two or more persons experience a similar illness resulting from the ingestion of a common food" (CDC, 2011a). The majority of foodborne illnesses has a bacterial or vial etiology (Linscott, 2011). Appendix 2 provides links for four tables that offer detailed information about incubation periods, clinical syndromes, and criteria for confirming the etiology once a FBDO is identified (CDC, 2011b). Each FBDO should to be reported online to the Foodborne and Diarrheal Diseases Branch at CDC through using the Electronic Foodborne Outbreak Reporting System (eFORS) web-based Form (CDC, 2011a). FBDOs can be related to one or more businesses. However, in some cases there can be regional, national, and international FBDOs (Murphy et al., 2011). One national outbreak was the Jack in the Box Restaurants E. coli outbreak in 1993. Due to this outbreak, over 700 people became sick and four children died as a result of this outbreak (Golan et al., 2004). The company lost $160 million in sales and other costs (Knight et al., 2007; Murphy et al., 2011). This shows that a single FBDO can result in major lawsuits, substantial compensation payments, higher insurance premiums and even the loss of business.

How widespread are foodborne diseases?

Each year 1 in 6 Americans experience sickness, 128,000 are hospitalized, and over 3,000 people die due to foodborne illnesses (CDC, 2011a). Despite the fact that most FBDOs are linked with eating out, many people continue eating out in the United States. Over 130 million Americans eat out daily and restaurants serve over 70 million meals (Cho et al., 2013; National Restaurant Association, 2009). The restaurant industry is perceived as one of the main sources for foodborne illnesses and the industry has to take correct actions to prevent and reduce potential FBDOs (Jones et al., 2004).

What are the causes of foodborne diseases?

The CDC identifies five major factors that are common to many FBDOs. They are food from unsafe sources; inadequate cooking; contaminated equipment; improper holding times and temperature and poor personal hygiene (CDC, 2011a; CDC, 2011b; Murphy et al., 2011). About 75% of FBDOs are linked with incorrect food handling practices by employees in foodservice establishments (Almanza and Nesmith, 2004). Previous studies suggest that improper food handling errors are often due to lack of knowledge in correct food safety practices by employees (Cho et al., 2013). Despite widespread efforts in offering education and training workshops on food safety, previous studies found that employees working in foodservice businesses still do not have sufficient knowledge in correct food safety procedures and often fail to demonstrate such practices (Cho et al., 2013). For example, Green et al. (2005) found that 25% of employees failed to wash their hands, 22% of them did not change gloves between touching raw meat and cooked food, and about 53 % of them do not use a thermometer when checking the cooked food.

How can foodborne disease outbreaks be eliminated or reduced?

Previous studies identified specific areas where positive changes are needed to eliminate or reduce FBDOs. They include personal hygiene, correct internal temperature for cooked foods, storage of potentially hazardous foods, and handling of food and work surfaces (Cho et al., 2012; Green et al., 2005; York et al., 2009). Murphy et al. (2011) suggest that one of the efficient strategies in reducing or overcoming food safety issues is having regular inspections undertaken by local or state environmental health experts. Such inspections provide an evidence of conditions witnessed in a foodservice business and can be used retrospectively to examine the effect of such inspections in order to reduce FBDOs. Murphy et al. (2011) further state that food safety training and certification programs for employees and managers can help reduce or eliminated FBDOs. The next section will briefly explain the role of training in managing food safety.

What is the role of training in managing food safety?

Proper training on food safety can enhance employees' food safety knowledge and their safe food handling practices (Green and Selman, 2005). For example, Finch and Daniel (2005) and York et al. (2009) found that ServeSafe training positively influence food handlers' food safety knowledge and food safety behavior. However, previous studies provide conflicting findings on whether increased knowledge on food safety results in seeing positive food safety attitudes and actions. Lin and Sneed (2005) suggest that improving knowledge on food safety can positively alter foodservice employees' behaviors and practices. On the other hand, York et al. (2009) found that proper training on food safety may not lead to positive behavioral changes.

According to other studies, there may be differences between employees' knowledge on food safety and their food handling behav-

ior (Haapala and Probart, 2004; Meer and Misner, 2000). On the other hand, Angelillo et al. (2000) and Henroid and Sneed (2004) claim that even if foodservice employees do not have basic knowledge on food safety and do not demonstrate acceptable safe food handling behavior, they can have positive attitudes about eliminating and reducing FBDOs. According to Pilling et al. (2008) foodservice employees' attitudes can predict proper behaviors in three areas. They are washing hands, sanitizing surfaces, and using thermometers. Green and Selman (2005) found several factors that can affect food handlers' food safety behavior, which are time pressure, lack of equipment and resources, attitude of managers and colleagues to food safety, and education and training of food safety.

Cho et al. (2013) found that food safety knowledge of Latino(a) foodservice employees in the United States may not affect food safety practices. Cho et al (2013) further claim that when employees believe that practicing correct food safety behavior can lead to higher customer and manager satisfaction, and kitchen efficiency, they seem to follow better food safety practices. Overall, the food safety training model developed by Seaman (2010) offers a structured and comprehensive approach including all key steps and areas to consider in delivering food safety training in foodservice businesses.

Summary

A FBDO is defined as "an incident in which two or more persons experience a similar illness resulting from the ingestion of a common food" (CDC, 2011a). Annually 1 in 6 Americans gets sick, 128,000 are hospitalized, and over 3,000 people die due to foodborne illnesses (CDC, 2011a). FBDOs are generally associated with eating out. About 130 million Americans eat out daily and foodservice businesses serve over 70 million meals (Cho et al., 2013; National Restaurant Association, 2009). There are five major factors that are common to many FBDOs. They are poor personal hygiene; food from unsafe sources; improper holding times and temperature; contaminated equipment and inadequate cooking (CDC 2011; Murphy et al., 2011). It is claimed that about 75% of FBDOs are related to improper food handling practices by employees in foodservice establishments (Almanza and Nesmith, 2004).

Despite widespread efforts in offering training workshops on food safety, previous studies found that employees working for foodservice businesses still do not have sufficient food safety knowledge and often fail to implement proper practices in food handling (Cho et al., 2013). There are several areas where positive changes are needed to eliminate or reduce foodborne diseases. They include ensuring personal hygiene, storage of potentially hazardous foods, correct internal temperature for cooked foods, and handling of food and works surfaces (Choi et al., 2013; Green et al., 2005; Murphy et al., 2011; York et al., 2009).

Proper training and certification on food safety can improve employees' knowledge and behavior (Green and Selman, 2005). The food safety training model developed by Seaman (2010) offers a structured and comprehensive approach including all key steps and areas to consider in delivering food safety training. Following the study findings by Cho et al. (2013), food safety trainings should focus on the importance of food safety practices in relation to higher customer satisfaction, higher satisfaction of managers, and efficiency in the kitchen so that those who attend training programs practice better food safety behavior.

Appendix II

Table 1. Guidelines for confirmation of foodborne-disease outbreaks (Bacterial) at http://www.cdc.gov/outbreaknet/references_resources/guide_confirming_diagnosis.html#bacterial Source: CDC (2011b). Guide to confirming a diagnosis in foodborne disease. Centers for Disease Control and Prevention http://www.cdc.gov/outbreaknet/references_resources/guide_confirming_diagnosis.html#bacterial accessed on July 14, 2013.
Table 2. Guidelines for confirmation of foodborne-disease outbreaks (Chemical) at http://www.cdc.gov/outbreaknet/references_resources/guide_confirming_diagnosis.html#chemical Source: CDC (2011b). Guide to confirming a diagnosis in foodborne disease. Centers for Disease Control and Prevention, http://www.cdc.gov/outbreaknet/references_resources/guide_confirming_diagnosis.html#chemical, accessed on July 14, 2013.
Table 3. Guidelines for confirmation of foodborne-disease outbreaks (Parasitic) at http://www.cdc.gov/outbreaknet/references_resources/guide_confirming_diagnosis.html#parasitic Source: CDC (2011b). Guide to confirming a diagnosis in foodborne disease. Centers for Disease Control and Prevention, http://www.cdc.gov/outbreaknet/references_resources/guide_confirming_diagnosis.html#parasitic, accessed on July 14, 2013.
Table 4. Guidelines for confirmation of foodborne-disease outbreaks (Viral) at http://www.cdc.gov/outbreaknet/references_resources/guide_confirming_diagnosis.html#viral Source: CDC (2011b). Guide to confirming a diagnosis in foodborne disease. Centers for Disease Control and Prevention, http://www.cdc.gov/outbreaknet/references_resources/guide_confirming_diagnosis.html#viral, accessed on July 14, 2013.