

Review of Barriers to Food Safety Management in Hospitality Industries of Ethiopia: The Impacts and Prevention

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Abstract

Food borne illnesses are responsible for a high number of diseases and are caused by consumption of food containing pathogens such as bacteria, viruses, parasites, food contaminated by poisonous chemicals and contaminated food and water. In Ethiopia, the problem of food borne disease attains great proportions due to poverty and lack of public health awareness, growing population, urbanization and lack of resources to overcome food contaminants that may occur from farm to fork from different sources. Therefore, the objective of this paper work was to review the major barriers to food safety management among food handlers in hospitality industries and its impacts on public health and prevention. This work showed that food handlers' knowledge and practice regarding food safety and management in Ethiopia was poor. The major barriers to food safety management among food handlers in hospitality industries in Ethiopia were also identified. Those barriers include age, marital status, service year, monthly income, food hygiene and safety training, certificate, attitude, knowledge and presence of supervision. Moreover, the most predominant bacteria species identified and isolated were *Bacillus cereus*, *Enterobacter spp*, *Shigella spp*, *Escherichia spp*, *Staphylococcus spp* and *Pseudomonas spp*. Therefore, food safety interventions should be carried out by all responsible bodies to ensure food safety practices and management to safeguard the health of communities from foodborne outbreaks and to reduce the healthcare cost for hospitalizations.

Keywords: Food Safety, Management, Hospitality Industries, Impacts, Prevention

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1. Introduction

Globally, food borne illnesses are responsible for a high number of diseases and are caused by consumption of food containing pathogens such as bacteria, viruses, parasites, food contaminated by poisonous chemicals or bio-toxins and contaminated food and water (Musa *et al.*, 2010; CDC, 2011; WHO, 2014). Among these the highest cause is due to bacteria which account 66%, then chemicals 26%, virus 4% and parasites 4% (CDC, 2011).

In Ethiopia, the problem of food borne disease attains great proportions due to poverty and lack of public health awareness (Admasu and Kelbesa, 2018). In absence of well-maintained and proper food handling practices, mass catering establishments have the potential to impart disastrous effect on human health. Food hygienic and safety issues in different catering are less practiced in developing countries including Ethiopia. Moreover, problems of growing population, urbanization, lack of resources to deal with pre and postharvest losses in food and environment and food hygiene issues in the country has continued to be stressed, adversely affecting the quality and safety of food supplies (Kalekidan *et al.*, 2014).

According to a study done in Mekelle city of Ethiopia, about 15.4% of the abattoir workers had no health certificate and 11.3% of the butchers didn't use protective clothes (Mekonnen *et al.*, 2013). The hands are the most line in the chain of transmission of gastrointestinal pathogens, either directly from the hand to the mouth, eye, nose, skin, or indirectly by handling of food or water (Assefa *et al.*, 2015; Jibrin *et al.*, 2016).

Concerning, food safety practices, a study done in traditional hotels of Jimma town showed that about 70% of food handlers had poor food safety practices (Mekasha *et al.*, 2016). In addition, a study done in the students' cafeteria of Addis Ababa University also showed that about 52.3% of food handlers had a poor food handling practices (Asrat *et al.*, 2015). Moreover, a study done in Jimma town (Kumera *et al.*, 2017) revealed that about 87.5% food handlers were not trained on food hygiene and 57.5% had no information about food borne diseases, causes and mode of transmission. Currently, many hospitality industries are increasing from time to time in different towns of Ethiopia but food safety management among food handlers in different hospitality industries are poor but barriers to this issue have not clearly documented. Therefore, this review aims to provide a brief overview of barriers to food safety management in hospitality industries of Ethiopia, its impacts and prevention and forward suggestions to bridge gaps observed in the current barriers to food safety handling, management and issues in the country.

2. Related Literature Reviews

2.1 Food Safety System in Ethiopia

In Ethiopia, the coordination activities particularly at lower levels of government bodies are so weak. There is no

clearly defined responsibility to control, monitor and evaluate food handlers of food establishments (Ayalew *et al.*, 2013). The practice of food safety is less satisfactory due to different factors in Ethiopia. An evidence indicate that prevailing poor food handling and sanitation practices, inadequate food safety laws, weak regulatory systems, lack of financial resources to invest safer equipment, and lack of education for food handlers are the main barriers to food contaminations in public food catering establishments (Admasu and Kelbesa, 2018).

2.2 Barriers to Food Safety Handling and Management

2.2.1 Food Handlers' Knowledge and Practices

In Ethiopia, a study done in Gondar town reported that about 70% of food handlers had poor food handling practice (Gizaw *et al.*, 2014). Age, marital status, service year, monthly income, food hygiene and safety training, attitude, knowledge and depth of knowledge were identified as major factors for food safety practices. Other studies done in Ethiopia revealed that the food handling practices among food handlers were poor (60%) (Fasikaw *et al.*, 2019); and inadequate knowledge (75%) and negative attitude (48%) were also reported in Somali, Ethiopia (Mohammed, 2018).

According to a study done in Somali region, Ethiopia (Mohammed, 2018), the prevalence of satisfactory food safety practice of food handlers was 20.9%. This finding also shows that having knowledge about food safety, presence of hand washing facility for food and handlers and presence of supervision were statistically significant factors associated with food safety practice. Other studies done in Ethiopia also showed that knowledge and attitude were significantly associated with food safety practices (Tesema *et al.*, 2014; Henok *et al.*, 2019).

A study done in Nigeria shows that different species of bacteria like *Escherichia coli* 20.3%, *Enterobacter spp* 15.4%, *Shigella spp* 14.7%, *Staphylococcus aureus* 14.7% and *Salmonella spp* 13.9%, were isolated due to lack of proper hygienic practices (Jibrin *et al.*, 2016). Another study done in Ghana reported that bacteria species like *Enterobacter spp*, *Escherichia spp*, *Staphylococcus spp* and *Pseudomonas spp* were isolated and found to be present in 20, 16, 12 and 11%, respectively (Enoch *et al.*, 2017).

2.2.2 Foodborne Diseases

Food contamination is widespread everywhere; in developing and industrialized countries. For example, in the United States, the CDC estimated that the burden of food borne illnesses is approximately 47.8 million cases, with over 128,000 hospitalizations and 3,000 deaths (CDC, 2011). The WHO estimates that children aged five-years and younger accounted for 40% of the foodborne ailment burden (WHO, 2017).

Globally, foodborne illnesses are increasing as triggering significant risks to the health, social development, economic development, and safety of food (WHO, 2017). Evidences show that approximately 10 to 20% of food borne diseases outbreaks are due to direct contamination by food handlers (CIFOR, 2009). The transmission of food borne diseases aggravated by unsafe food handling practices and cause symptoms like diarrhea and vomiting (Addis and Sisay, 2015). People can also get sick when they eat food contaminated with hazards (FSM, 2011).

According to the Ministry of Health report of 2011, dysentery and gastroenteritis were among the top ten diseases of outpatient visits (MoH, 2011). A study done in Mekelle city, Ethiopia reported that the major bacterial pathogens isolated were *Escherichia coli*, *Staphylococcus aureus* and *Bacillus cereus* (Mekonnen *et al.*, 2013). The mean values of these bacterial load of abattoir meat, butcher shops and street meat sale was also found to be 1.1×10^5 , 5.6×10^5 and 4.3×10^6 cfu/g, respectively. A report from the students' cafeterias of Jimma University also shows that about 114(49.6%) food handlers were tested positive for one or more potential food borne bacterial contaminants and 73(31.7%) were tested positive for enteric pathogens (Assefa *et al.*, 2015).

Another a study done in Jimma town also shows that people are suffering from different food borne infections like Ascariases, typhoid, tapeworm, tuberculosis and infectious hepatitis (Wendafraash, 2010). In 2007 in Oromia Region alone 1913 cases of acute watery diarrhea and 41 deaths were reported from June 25 to July 27. In the first week of September, 2009, 13 652 cases was reported from 77 districts in 7 regions with case fatality rate of 2.2%. The population at risk was estimated at 8.63 million (Wendafraash, 2010).

2.2.3 Characteristics of Food Establishments

A study done in done in Debarq town, Ethiopia (Fasikaw *et al.*, 2019) showed use of three compartment dishwashing systems and refrigerator were factors associated with food handling practice. Another study done in Dangila town food and drink establishments, Ethiopia, existence of shower facility, marital status, monthly income and separate dressing room were found to be significantly associated with good food handling practices (Tesema *et al.*, 2014). Moreover, a study done in Jimma town, Ethiopia, about 42.5% of food establishments had improper solid waste storage receptacles, 70 % of the kitchens and 67.5% of the dining room had also no adequate ventilation (Kumera *et al.*, 2017).

3. Impacts of Food Safety Management

3.1 Health Impact of Food Safety Management

Health can be defined as the state of optimal physical, mental and social wellbeing and absence of disease and infirmity (WHO, 2010). Food contaminated by harmful bacteria, viruses, parasites or chemical substances can lead

to a wide range of health problems. Most foodborne illnesses are more severe and are limited to brief episodes of diarrhea, nausea or other acute gastrointestinal systems.

3.2 Economic Impact of Food Safety Practices

A foodborne disease resulting from consumption of contaminated food can bring unimaginable economic losses in various forms like unexpected expenditure on hospitalization bills, treatment costs, expenses on recalls, disposal and penalties, legal costs (Hussain, 2013). An increase in the globalized food trade in recent years, extensive production often involving many sites and a complex supply chain all contribute toward an increased number of microbiological food safety outbreaks.

Moreover, the volume of international food trade increases yearly. These are the reasons behind huge pressure on the food companies to be competitive globally. The cost estimate of food safety incidents to the US economy is around 5.7 billion spent on notification of customers, recall of food from shelves and paying damages as a result of law suits (Ohio State University, 2015). In Canada, approximately 4 million cases of domestically acquired foodborne illness occur each year, resulting in an estimated 11,600 hospitalizations and 238 deaths (Thomas *et al.*, 2015). These illnesses have significant economic impacts on society through direct health care costs and indirect costs such as lost productivity (McLinden *et al.*, 2014).

4. Benefits of Preventing Poor Food Safety Practices

The impacts of food contamination can be devastating. Therefore there is always the need to prevent it to mitigate diseases, death and economic losses. Economic analysis of food safety related costs showed that it is much cheaper for a producer to invest in preventing events of food borne outbreaks than the cost after an event (Ribera *et al.*, 2012). To reduce food borne illnesses, it is crucial to gain an understanding of the knowledge and practices of food handlers. Several factors contribute to the spread of food borne outbreaks by food service workers (Tesema *et al.*, 2014; Admasu and Kelbesa, 2018; Henok *et al.*, 2019).

Compromised food safety can disrupt the supply of food at any time and create the condition of food insecurity. A supply chain strategy emphasizes the management of all food safety issues that can arise due to improper transferring, handling and distribution of the product (Xuexin, 2011; Giacometti *et al.*, 2012). In fact, when managing food safety, it is essential to implement proactive strategies to minimize the probability of delivering an unsafe product. An adequate supply of Safe, wholesome and healthy food is essential to the health and wellbeing of humans as it reduces microbial contamination and further improves nutrition and food security status. Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life (FAO, 2008). Thus, besides assuring that all people have access to enough food to lead productive lives, food security also has the challenge of assuring that the food is safe from food hazards.

5. Regulatory Bodies of Food Safety Management

In Ethiopian Food, Medicines and Health Care Administration and Control Authority were established in accordance with Food, Medicine and Health Care Administration and Control Regulation No 189/ 2002. According to the new proclamation, the Authority is responsible for assuring safety and quality of food, safety, efficacy, quality and proper use of medicines, competence and ethical practice of health professionals, competence of health and health related institution and services (Dawit, 2010). The Authority has accredited or internationally recognized on system certification based on ISO/IEC 17021 Quality Management System on ten scopes (Fikremariam, 2010). However, the food system in Ethiopia is not always as organized and developed as in other developed countries due to problems of growing population, urbanization, lack of resources to deal with food hygiene issues (Wendafrash, 2010).

6. Conclusion

This literature review showed that food handlers' knowledge and practice regarding food safety and management in different hospitality industries in Ethiopia was poor. This work also concluded that age, marital status, service year, monthly income, food hygiene and safety training, certificate, attitude, knowledge, presence of hand washing facility for food and handlers and presence of supervision were identified as major barriers to food safety practice. Moreover, the most predominant bacteria species like *Bacillus cereus*, *Enterobacter spp*, *Shigella spp*, *Escherichia spp*, *Staphylococcus spp* and *Pseudomonas spp* were identified and isolated. Furthermore, food safety management in Ethiopia is less satisfactory and poor organized compared to other developed countries. Therefore, all responsible bodies should ensure food safety management practices as well as poor sanitation, and substandard and crowded living conditions of food safety lead to an increased risk of acquiring food borne infections.

7. References

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