بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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Application of Hazard Analysis Critical Control Points (HACCP) Model in Food Services in Ain Shams Specialized Hospital

Thesis

Submitted for Partial Fulfillment of Master Degree in Quality of Health Care

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Abstract

Background: Food borne diseases represent huge public health problem globally with high morbidity and mortality rates, leading to high economical loss and poor quality of life. Foodborne outbreak in a health care setting represents a big problem in risky and highly susceptible individuals.

Objectives: To identify the potential hazards in the food service via implementation of Hazard Analysis Critical Control Points model (HACCP) in Ain Shams specialized hospital food service and to implement the corrective actions for the identified hazards.

Methods: the study was carried out through several steps; A team was assembled, identification of the prerequisite program components was carried out, the identified menu items were grouped, hazards were identified and evaluated, the critical control points with their limits were identified and measured, the corrective actions were implemented and verification was carried out.

Results: The study revealed defective prerequisite program with only 59.4% compliance rate. Also the three types of hazards (biological, chemical, physical) were involved in our institution with predominance to the biological one; the measured critical control points mostly failed to meet the limits and only reheating temperature was able to meet the limits.

Conclusion: The necessary founding element of any food safety program, comprising the policies, operating procedures and similar organizing documents was deficient in the studied hospital.

Implementation of the basic required sanitation aspects in food handling was almost half applied. HACCP program implementation in our institution is possible but need managerial cooperation and commitment.

Keywords: HACCP, prerequisite program**,** critical control points, policies, operating procedures

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List of Abbreviations

Abb.	Full term
AIDS	Acquired immune deficiency syndrome
ASQ	American society for quality
BSE	Bovine spongiform encephalitis
CCP	Critical control points
CJD	Called creutzfeldt-jacob disease
DON	Deoxynivalenol
EC	European Commission
FAO	Food and agriculture organization
FDA	Food and Drug Administration
FIFO	First in first out
GHPs	Good Hygiene Practises
GMPs	Good manufacturing practices
HACCP	Hazard analysis and critical control point principles
LMD	low microbial diet
MSDS	Material safety data sheet
NACMCF	National Advisory Committee on Microbiological Criteria for Foods
NAS	National Academy of Sciences
PRP	Prerequisite program
RTE	Ready-to-eat
SOPS	Standard operating procedures
TTX	Tetrodotoxin
TSEs	Transmissible spongiform encephalitis
USDA	United States Department of Agriculture
WHO	World Health Organization

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INTRODUCTION

Food is the most important everlasting concern of human, but actually it is one of the most important transmission routes of diseases worldwide. This is why food safety and hygiene are of a public health importance ***(Odeyemi, 2016)***.

Food safety and hygiene contribute to public health via prevention and control of food borne diseases to human. Food borne diseases are of worldwide distribution and with variable prevalence with more than 250 sources of food borne diseases being identified ***(Odeyemi, 2016)***.

Occurrence of these diseases is due to consumption of contaminated food and water from different sources. The contamination may be physical, chemical and microbiological. The factors causing the contamination of the food may threaten the safe consumption of it and thereby making the food harmful to human health. For this reason, it is necessary to utilize various resources to prevent the food from being contaminated at all stages of the food chain, from harvest to consumption ***(Uçar et al., 2016)***.

A substantial proportion of people show increased susceptibility to foodborne illness compared with healthy adults. This susceptibility can result from chronic or acute illness, medication and/or age. The extent of this increased susceptibility differs according to the cause. Cases and

outbreaks of foodborne infection in healthcare settings can result in serious illness, wastage of expensive medical treatments, spread of infection to other patients and staff and disruption of services ***(Lund et al., 2010)***.

In health care settings numerous foodborne out breaks were reported, for example the outbreak in Sweden, 1999 that resulted in 400 cases including secondary spread. And in Denmark, 2005 foodborne outbreak in hospital, 2nursing care homes resulted in 970cases ***(Lund & O'Brien, 2014).***

The food safety issues in healthcare environments are different from food safety issues in commercial catering establishments**.** As food safety in hospitals is actually a top priority issue due to its direct impact on patients through being vulnerable to develop food borne illness, for example, the very young and the elderly people, and the immune compromised. These people may form nearly 20% of the population in the United States and the United Kingdom ***(Lund et al., 2011)***. Solid organ transplant patients are particularly susceptible to infections ***(Obayashi et al., 2012).***

Certain high – risk foods should be excluded from all hospital menus. Undercooked foods, unpasteurized milk products that could contain pathogens have no place on the menu in a healthcare institution. For immunecomprommised and other high – risk patients, in particular those with haematological malignancies," a low microbial diet" (LMD)

can be used. LMDs are not sterile, but are diets in which specific foods are excluded in an effort to reduce the risk of infection ***(Grintzali & Babatsikou, 2010)***.

Preparing carefully planned meals that provide all ingredients necessary for each patient is equally important as the medical treatment to achieve the goal of plan of care ***(Naithani et al., 2008).***

The European Union regulation on the hygiene of foodstuffs (European Commission (EC) 2004) and Food Hygiene (England) Regulations 2006 and similar regulations in Scotland and Wales, include a requirement that food business operators should put in place, implement and maintain a permanent procedure or procedures based on hazard analysis and critical control point principles (HACCP) ***(Foot Safety Authority of Ireland, 2007)***.

HACCP procedure is a logical, structured approach to the analysis and control of potential hazard points in a food operation. By identifying where in the process the hazards are likely to occur, it is possible to put into place the control measures required ***(Richards et al., 1993)***.

HACCP applies to meals Supplied in hospitals and institutions as well as other food businesses. In order for a HACCP system to be effective, prerequisite programs must be in place to control factors such as Good Manufacturing

Practice, raw material control, production control, pest control, sanitation and maintenance, use of approved suppliers and supplier auditing schemes ***(Rogan et al., 1996)***.

It is particularly important that food for vulnerable groups of people is obtained from reputable suppliers who comply with legal requirements, have in place an appropriate food safety management system based on HACCP principles, and use safe food-handling techniques. Hazard Analysis Critical Control Points HACCP has main seven principles which entail; conducting a hazard analysis, identifying the critical control points, establishing critical limits, monitoring critical control points (CCP), establishing corrective actions, verification and record keeping. ***(U.S. Department of health and Human Services, 2006).***

In Egypt many hospitals are seeking accreditation, and so implementation of HACCP by quality team members inside health care institution, is mandatory to assure food safety in hospitals.