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Implementation of HACCP and Food Safety Program in Al–Ain City Abu Dabi

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Abstract

The purpose of this study was to determine the constraints of HACCP and food safety programs in 100 food businesses in Al–Ain city by asking the managers. Many of managers (47%) had high school education degree, but less than half (46%) of them had been employed 6-15 years in this work. Most of those managers (95%) did not send food samples or swabs (97%) to the laboratory for testing the bacterial contamination. About 84% of the employee suggested that must be given more training to improve food safety in their businesses, because 94% of those respondents were lack of prerequisite program of food safety and knowledge about HACCP (91%). Developing and implementing written standard operating procedures in food businesses are one of the first steps to build effective HACCP and other food safety system in Al–Ain city.

Keywords

HACCP; Food safety; Prerequisite; Abu Dabi; Al-Ain

Introduction

During the last three decades, Hazard Analysis Critical Control Points (HACCP) has been progressively introduced and applied for the benefit of food industry [1]. The system can be considered as an efficient tool for both industry and health authorities to prevent food borne diseases if it is based on understanding and proper implementation, because it is not HACCP system itself which makes food safe, but its correct application [2]. In food businesses, HACCP must be able to adapt to different working patterns in operation and often to unexpected variations in potential demand and workloads. Furthermore, the lack of financial resources, technical expertise, and small staff base only add to the difficulty in applying HACCP not just in retail and catering but also among smaller food manufacturers [3]. Hazard Analysis Critical Control Points (HACCP) is a system of food safety management that in the last few decades has become an increasing part of national governments and international strategy to reduce the prevalence of food-borne diseases. There has been wide dissemination and scientific support of its principles. This is reflected in recommendation of HACCP by organizations such as the International Commission on Microbiological Specifications for Foods [4] and a Codex Alimentarius Commission [5] decision to recommend its use by both the food industry and regulatory authorities. Potential barriers to the implementation of HACCP need to be identified and examined as an initial step in the development of any HACCP implementation strategy. Some of these may vary due to internal factors in individual businesses, e.g. the level of knowledge or resources available to a business. Others may be due to external factors, such as the availability of government or industry support [6].

There are many issues imposing risk on food safety due to industrialization and mass production, emergence of longer and more complex food chains, fast food consumption, street vendors and growing international trade and tourism [7,8]. Good Manufacturing Practices (GMP), Good Hygiene Practices (GHP), Hazard Analysis Critical Control Points (HACCP), control and production systems are used to ensure food safety. In addition, food safety systems are used simultaneously with Total Quality Management and should be implemented at every stage of food production "from farm to the fork" [9].

The success in developing, installing, monitoring and verifying a successful HACCP system is dependent on a complex mix of managerial, organizational and technical hurdles. In coping with this set of interrelating factors, even the largest food companies, equipped with significant resources of money, technical expertise and management skills, may face a difficult challenge; the small and medium sized enterprises (SMEs) may feel that the difficulties of HACCP are potentially insurmountable [10].

The concepts of prerequisite program (PRP) and how it will benefit HACCP had been reported by Wallace and Williams [11]. It has been recommended that before HACCP is utilized, a prerequisite program is needed [12]. If the PRP are not used, there probably will be a waste of resources and money and might cause more resistance for future utilization and HACCP system implementation. Prerequisite program, which support HACCP plan, also called standard operating procedures (SOP), includes good personal hygiene (employee hygiene practice), cleaning and sanitation programs, proper facility-design practices, equipment-maintenance, and supplier selection and specific programs (cross-contamination control).

According to Hielm et al. [13] most difficulties were established in devising the own-checking plan/HACCP plan the most common answers were choosing the critical control points, committing the firm's entire workforce and organizing the documentation of monitored results. One of the major problems is that the food workers often lack interest and they often have a negative attitude toward food safety programs [14].

The purpose of this study was to identify the main barriers in developing and implementing HACCP system in some food premises located in Al-Ain City.

Materials and Methods

Food businesses

This survey was conducted from November 2004 to May 2005 involving 100 food businesses in Al Ain City, Abu Dubai. Assessments of the 100 food businesses were conducted over 12 months. The assessments were consisted of Table 1 cold store services (10),

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processing and marinating premises (15), transporting companies (10), fish premises (25) and meat premises (40). Each food business was visited and conducting the interviews and administrating questionnaire.

Questionnaire design

The questionnaire combined demographic characteristics and food safety practices and the results are expressed as percent value [15].

Results

Demographic information related to characteristics of managers and their business was presented. The majority of food businesses employed 10 or fewer (83%) employees. Many of the managers (47%) had high school education degree and approximately less than half (46%) of them had been employed 6–15 years in some segment of the food businesses. The majority of food businesses (71%) of the food handlers were between 31 and 50 years of age (Table 2).

Table 3 showed the food safety practices implemented in food businesses. Taking and recording end-point temperature of all foods that only 12% of food business managers always implemented. Sanitizer concentration usually was not checked in food businesses (81%). A few managers reported that developing procedures for storing food (18%), personal hygiene (23%) and cleaning and disinfection (16%). Most of the managers (95%) did not send food samples or swabs (97%) to the laboratory for testing bacterial contamination.

As shown in Table 4, that refers to managers suggestions of how they could improve food safety in their business, 95% of interviewers answered by implementing basic hygiene procedures, while 53% of interviewers answered always being aware of new improvement.

In Table 5, lack of prerequisite (94%), time (43%), staff turnover (87%) and inadequate physical condition (35%) were recorded by the employers.

Managers were asked to agree or disagree with different statements (Table 6) related to the difficulties of implementing HACCP and a food safety management system. The high percentage (80%) agreed with the statement related to the need for more checks by the authorities. A lack of knowledge about HACCP/other food safety management systems was also identified as the main barrier to its implementation (65%). In addition, 36% agreed that a source of information about HACCP/food safety management systems was inadequate.

Discussion

In the present study, 71% of the respondents their age range was

Table 1: Types of food business.

Type of food businesses	No.
Cold store	10
Processing and marinating premises	15
Transporting companies	10
Fish premises	25
Meat premises	40
Total	100

Table 2: Demographic characteristics of the food business and their directors (*n*=100).

Characteristics	Number of Employee (%)
10 or fewer	83
11–50	17
51 or more	0
Total	100
Implementation of HACCP system	6%
Implementation of ISO	0%
None of the above	94
Total	100
Managers of food businesses (Age)	
30 years and youngers	13
31–50 years	71
Older than 51 years	16
Total	100
Educational level	
Graduate of primary school	13
Graduate of secondary school	28
Graduate of high school	47
Graduate of college	12
Total	100
Years in food service	
5 years or fewer	6
6–15 years	46
16–25 years	37
26 years or more	11
Total	100

Table 3: Food safety practices implemented in food businesses (*n*=100).

Food safety practices	(%)
Take and record end-point temperatures of all cooked foods	
Always/daily	12
Sometimes	27
Never	61
Total	100
Take and record temperature of food on the serving line	
Always/daily	12
Sometimes	41
Never	47
Total	100
Check concentration of sanitizing solutions	
Always/daily	7
Sometimes	12
Never	81
Total	100
Take and record food temperature upon receiving	
Always/daily	25
Sometimes	45
Never	30
Total	100
All equipment and cutting boards are sanitized between uses	
Always/daily	13
Sometimes	41
Never	46
Total	100

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Food safety practices	(%)
Take and record refrigerator/freezer units temperature	
Always/daily	15
Sometimes	27
Never	58
Total	100
Developed food storage procedures	
Yes	18
No	82
Developed personnel hygiene procedures	
Yes	23
No	77
Developed cleaning and disinfectation procedures	
Yes	16
No	84
Send food product samples to a laboratory for bacterial testing	
Yes	5
No	95
Take swabs of food production equipment and counters to determine bacterial count	
Yes	3
No	97

Table 4: Managers suggestions of how they could help themselves to improve food safety in their businesses (*n*=100).

Responses	(%)
Always being aware of new improvement	53
Implementing basic hygiene procedures	95
Carrying out routine checks	81
Give more training to keep everyone aware	84
Follow HACCP system	23
Have seminars and lectures for staff	30
Avoid cross contamination	85
Make sure only good products are brought	99
Controlling temperature	65
Simple guidelines	53
Less staff turn over	87

Table 5: Barriers identified by managers to implementing food safety management systems (*n*=100).

Barriers	(%)
Lack of prerequisite programs	94
Lack of knowledge about HACCP	91
Cost	89
Time	43
Staff turn-over	87
Lack of management	25
Lack of physical conditions	35
Lack of employee motivation	73
Complicated terminology	92
Need for simple guidelines	89
Volume of paperwork	77
Lack of personnel training	15
Not enough support from the authorities	79

Table 6: Statements relating to barriers to food safety management systems (*n*=100).

Statements relating to barriers	Agree (%)	Disagree (%)	Not sure (%)
Lack of knowledge about HACCP/food safety management systems	65	10	25
HACCP/food safety management systems is too complicated	67	12	21
Food safety is not really a business priority	23	70	7
I do not have the time for food safety issues	8	74	18
I cannot see the benefits of HACCP/food safety management systems	16	64	20
Inadequate sources about HACCP/food safety management systems	36	20	44
It costs too much to have a proper food safety system in place	28	22	50
There should be more food safety checks by the authorities	80	15	5
Food safety is not really a major priority	7	90	3
There no real incentive for having a HACCP/ food safety management systems	10	45	45

between 31-50 years, 47% of them had higher school education, this results in agreement with [16] who reported that food managers in his study had higher education and they agreed with benefits of certification and continuing education related to food safety. In our study the most of the interviewed employees did not implemented food safety practices in food businesses. Forty seven percent of respondents not recorded end-point temperature of all foods. Sanitizer concentration usually was not checked in food businesses (81%). Most of the managers (95%) did not send food samples or swabs (97%) to the laboratory for testing bacterial contamination. Well design of premises structure and reliable equipment will maintaining hygienic conditions for ingredient and food products [17]. Most of managers have some awareness about the food safety management, but only 30% of managers practice HACCP system program and this was due to lack of staff motivation, training and turnover, this in agreement with [16,18]. These findings were in agreement with findings of Bas et al. [9] who named the problems of HACCP as inadequate equipment and physical condition of the facility. Also in our study, the main constraints to implementing a HACCP based on food safety management system is lacking of prerequisite program (Table 5), and also lacking of knowledge, cost and time.

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