

Perspectives of "Safety measures and Hazard Analysis Critical Control Point" Application among Staffs and Workers of Ice Cream Factory in Erbil City Kurdistan Region/Iraq

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Abstract

Background: Hazard Analysis Critical Control Point (HACCP) system due to decrease health hazards of food during processing steps and monitoring procedures, corrective measures, records, and verifications.

Objective: To to identify overall safety measures and Perspectives of workers and staffs about Hazard Analysis Critical Control Point (HACCP) application and to identify association between variables and Hazard Analysis Critical Control Point. (HACCP) system application.

Patients and Methods: It is a descriptive, cross sectional design. The study will be conducted in ice (Ice Land) factory for ice cream in Erbil, from first October 2019 to first April 2020, non-probability purposive sampling technique used to select 100 staffs and workers in the factory. The tool was contained four main parts. The tool was viewed to panel of experts for validity data was analyzed by the application of SPSS program version 23.

Results: There were three levels (poor, fair and good) of Perspectives and safety measures used among participants about Hazard Analysis Critical Control Point (HACCP), and there was no statistical association between variables and Perspectives of HACCP system and safety measures during working in the factory.

Conclusion: Most of the participants have fair level regarding using safety measures and their Perspectives about application HACCP system and there was No statistical association between variables and safety measures, Perspectives about (HACCP system) application.

Keywords: Safety measures, Ice cream factory, Perspectives, HACCP

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Introduction

Hazard Analysis Critical Control Point (HACCP), which stands for Hazard Analysis and Critical Control Point, is defined as "Food Safety Control System" in Taiwan's

food hygiene legislative system [1]. This system due to decrease health hazards of food during processing steps and monitoring procedures, corrective measures, records, and

verifications [2] Hazard Analysis Critical Control Point (HACCP) certification in Iraq is a mandatory requirement for industries involved in any business of food chain. Hazard Analysis and Critical Control Point is a systematic preventive approach to food safety from biological, chemical and physical hazards in production process that can cause the finished product to be unsafe. Hazard Analysis Critical Control Point (HACCP) certification services in Iraq are a major importance. So to ensure that the food products being produced is free from any sort of Hazard and HACCP system can be implemented to go out all the stages of food chain starting from the raw material, transportation, storage, production, packaging, delivery and up to the point of human consumption .HACCP in Iraq is a basic requirement. Before starting the implementation of HACCP system a prerequisite programs needs to be in place and also education and training has to be provided to all the process it's and employees of an organization to ensure that they are really well aware of the importance and significance of HACCP. [3 A]. HACCP is a management system for food hygiene so HACCP system has been globally adopted by many countries as the United States, Japan, the United Kingdom, and member states of the European Union, as well as international organizations such as the World Health Organization, Food and Agriculture Organization, and Codex Alimentarius Commission (CAC) [3 B]. "Food Safety Control System" in Taiwan's meals hygiene

legislative system. HACCP is a further feature of the presented first-rate guarantee method based on standard running procedures, Good Manufacturing Practice, and Good Hygiene Practice in Taiwan [2]. In consideration of the development of the industry and the increasing number of food poisoning incidents, the Department of Health, Executive Yuan started to promote the development of HACCP practices stage by stage from encouraging voluntary application to mandatory implementation [4]. In 2013 because of Maleic acid incident in Taiwan, the food industry has encountered many crisis resulting lowering consumer's confidence toward food and financial losses [5]. Implementing HACCP is helpful in gaining consumers' trust and establishing a good corporate image. Moreover, many countries such as the United States, member nations of the European Union, and Japan have sever requirements regarding food imports [6]. The application of HACCP can help improving products and enhancing staff's safety. In Taiwan, ice cream is a big factory products that accounts for a market share properly [7]. Chocolate is the second favorite ice cream flavor in Taiwan [8]. Chocolate frozen dessert could be a sensible microorganism growth medium due to its nutrients (lactose, protein, saccharide, etc.) and neutral hydrogen ion concentration profile [5]; therefore, preventing microbial contamination has been crucial for its safety control. HACCP has been proven to be effective in inhibiting the growth of *Staphylococcus aureus*, *Escherichia coli*, and

other human pathogens in chocolate ice cream production [9]. The quality and safety of the final product can be effectively produced through the application of the HACCP system [10].

The Objectives of the study included identifying overall safety measures may use by workers and staffs in the factory, identifying perspectives of them about HACCP application and finding association between variables and HACCP system application.

Patients and Methods

The study was a descriptive, cross sectional design, conducted in ice cream factory (Ice Land) in Erbil City /Iraq from 1st October 2019 to 1st April 2020, non-probability purposive sampling technique used to select 100 staffs and workers out of 134 workers in the factory used liker scale for scoring system and depending on sample size calculation. The permission was taken from ice cream or (Ice Land) Company and from each staff or workers before doing interview with them and also the researcher was taken the permission from the ethical committee of the college of nursing, general directorate of factories in Erbil city . Data were collected by research interview technique with workers and staffs, using the standardized questionnaire. The questionnaire was contained three parts. part one is related to socio demographic characteristic of the staffs and workers which include (age, gender, address, type of family, , education level,, type of job, years of experiences and family status , Second

part consists of items related to safety measures as (1 for done ,2 for some time and 3 for not done), Part three related to items about staff and workers perspective regarding HACCP application, which included scoring system as (1 for yes and 2 for not) in all items to identify their levels of perspectives about HACCP application. The tool was viewed to panel of experts in nursing field and other fields for the validity of the questionnaire. The researcher promised to keep the information confidential, and use these data for this study only then he explained the purposes of this study to each participant to identify their levels of perspectives about HACCP System application and to find out their levels about using safety measures in the factory. The researcher also has explained for them the importance of this study about preparing ice cream in safety method to be reached to consumers and markets properly.

Statistical analysis

The statistical analysis was done by the application of SPSS program version 23. (Statistical Package for Social Science), and included descriptive statistical analysis, frequency and chi-square. (If the P- value less than or equal to 0.05 means significant)

Results

Table(1) revealed the following demographic characteristics of sample study as followings: majority of them were between 30-39 years old, most of them single 69%, primary school 27%, nuclear family 55%, more than 2 years experiences 80%, and 26% of them were administration staff.

Table (1): Distribution of demographic Characteristics of Staffs participated in the study

Items	Frequency	%	
Age groups	20 - 29	38	38 %
	30 - 39	44	44 %
	40 - 49	9	9 %
	50 - 60	9	9 %
	Total	100	100 %
Marital Status	Married	11	11 %
	Single	69	69 %
	Others	20	20 %
	Total	100	100 %
Level Education	Read and Write	6	6 %
	Primary	27	27 %
	Secondary	24	24 %
	Institute	20	20 %
	College	23	23 %
	Total	100	100 %
Family Types`	Nuclear	55	55 %
	Extended	24	24 %
	Others	21	21 %
	Total	100	100 %
Staffs' experience by year	Two years	20	20 %
	More than two years	80	80 %
	Total	100	100 %
Address	Urban	38	38 %
	Rural	40	40 %
	Other Place	22	22 %
	Total	100	100 %
Types of Job	Technical Staffs	20	20 %
	Administrational Staffs	26	26 %
	Services Staffs	23	23 %
	Transportation	16	16 %
	Other Staff	15	15 %
	Total	100	100 %

Table (2) indicated the levels of using safety measures by workers and staffs as followings: 8% of them poor user, 42% of them were fair user and 50% of them were good user of safety measures.

Table (2): Levels of using Safety Measures in the company

Items	Frequency	%
Poor Level of Safety Measures (10 - 13)	8	8 %
Fair Level of Safety Measures (14 - 16)	42	42 %
Good Level of Safety Measures (17 - 20)	50	50 %
Total	100	100 %

Table (3) revealed levels of perspectives among workers and staffs in the company regarding HACCP system of system application as followings: 27% of them have poor perspective, 47% have fair Perspective while e 26% of while 26% of them have good perspective regarding application HACCP system.

Table (3): Levels of Staffs` Perspective about HACCP system

Items	Frequency	%
Poor Level of Staffs` Perspective (2 - 4)	27	27 %
Fair Level of Staffs` Perspective (5 - 6)	47	47 %
Good Level of Staffs` Perspective (7 - 9)	26	26 %
Total	100	100 %

Table (4) indicated that there was no significant association between variables and their perspectives regarding HACCP system application.

Table (4): The association between Variables and Levels of HACCP Application

Items		Levels of HACCP Application			P value
		Poor Level (11 - 13)	Fair Level (14 - 16)	Good Level (17 - 19)	
Age	20 - 29	8 (8 %)	19(19 %)	11(11%)	0.8
	30 - 39	7 (7 %)	24(24 %)	13(13%)	
	40 - 49	1(1 %)	6(6 %)	2(2%)	
	50 - 60	1(1 %)	7(7 %)	1(1%)	
	Total	17(17 %)	56(56 %)	27(27%)	
Marital Status	Married	0 (0 %)	7(7 %)	4(4 %)	0.54
	Single	14(14 %)	38(38 %)	17(17 %)	
	Others	3(3 %)	11(11 %)	6(6 %)	
	Total	17(17 %)	56(56 %)	27(27 %)	
Level Education	Read and Write	1(1 %)	4(4 %)	1(1 %)	0.28
	Primary	1(2 %)	19(19 %)	6(6 %)	
	Secondary	8(8 %)	9(9 %)	7(7 %)	
	Institute	4(4 %)	10(10 %)	6(6 %)	
	College	2(2 %)	14(14 %)	7(7 %)	
	Total	17(17 %)	56(56 %)	27(27 %)	
Family Types`	Nuclear	9(9 %)	34(34 %)	12(12 %)	0.62
	Extended	5(5 %)	12(12 %)	7(7 %)	
	Others	3(3 %)	10(10 %)	8(8 %)	
	Total	17(17 %)	56(56 %)	27(27 %)	
experience by year	Two years	1(1 %)	13(13 %)	6(6 %)	0.27
	More than two years	16(16 %)	43(43 %)	21(21 %)	
	Total	17(17 %)	56(56 %)	27(27 %)	
Address	Urban	5(5 %)	23(23 %)	10(10 %)	0.04
	Rural	12(12 %)	18(18 %)	10(10 %)	
	Other Place	0(0 %)	15(15 %)	7(7 %)	
	Total	17(17 %)	56(56 %)	27(27 %)	
Types of Job	Technical Staffs	1(1 %)	11(11 %)	8(8 %)	0.16
	Administrational Staffs	3(3 %)	18(18 %)	5(5 %)	
	Services Staffs	6(6 %)	9(9 %)	8(8 %)	
	Transportation	4(4 %)	11(11 %)	1(1 %)	
	Other Staff	3(3 %)	7(7 %)	5(5 %)	
	Total	17(17 %)	56(56 %)	27(27 %)	

Discussion

The findings of the study revealed that there were three level of safety measures done by workers or staffs in ice cream (ice land) company as followings (poor ,fair and

good) while majority of them have used safety measures in fair level which represented 42% .This findings was not agreed with the study done by [11], who said

that milina factory for ice cream in Malins has used HACCP system properly and their workers has used personal protective equipment (PPE) properly , while this findings were agreed with the study done in [12], so most of the workers in their company using PPE to prevent noise, and airborne and other health risks. The other findings of the study indicated that staffs and workers had not sufficient perspectives about HACCP system so majority of them had fair level of that about HACCP system which represented 47% of them, so it means that in ice land company this system (means HACCP System) not applied properly, this findings was agreed with the study done by [12] who mentioned in their findings that ice cream company in their country not in high quality and standardized and also there are inappropriate processing condition , unsanitary manufactured environment , lack of enough knowledge of hygiene especially during adding other subjects to ice cream so needs governmental support to wider application of HACCP system .Other findings of the study revealed that there was no significant association between variables and their perspectives regarding HACCP system application in ice land company this is in my opinion because all staffs and workers were not involved in any workshop or training program about HACCP system, majority of the workers and staffs in ice land company use Personal Protective equipment (PPE) to prevent themselves from noise and other health hazards.

Conclusions

The outcome of the study revealed that there were three levels as (poor, fair, and good) among staffs and workers about using safety measures in the company while majority of them have used fair level. There were three levels of perspectives as about HACCP system while majority of them have used fair level for that. There was not significant association between variables and their perspectives about HACCP system application.

Recommendations

The study recommended involving all staffs and workers in ice Land Company to participate with HACCP system program.

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