

Palestine Polytechnic University

College of Engineering



**Proposed Classification System For Restaurants
And Food Establishments In Hebron City**

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Submitted to the college of Engineering

**In partial fulfillment of the requirements for the
Bachelor degree in Environmental Technology Engineering**

May, 2019

Palastine Polytechnic University

Collage of Engineering

Civil Engineering Department

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Supervisor Signature

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Hebron, May ,2019



الى من جرع الكأس فارغاً ليسقيني قطرة حبه

الى من كتبت انامله لنا لحظة سعادة

الى من حصد الأشواق عن دروبى ليمهد لى طريق العلم

الى القلب الكبير(والدي العزيز)

الى من أرضعتني الحبه والحنان

الى رمز الحبه وولسم الشفاء(والدتي الحبيبة)

الى القلوب الطاهرة الرقيقة والنفوس البرينة الى رباحين حياتي

الى من يحملون في عيونهم ذكريات طفولتي وشبابيأخوتي وأخواتي

الى من سرنا ونحن نشق الطريق معا نحو النجاح والأبداع.....زملائي وزميلاتي

الى من ضحوا بحريتهم من أجل حرية غيرهم.....الأسرى والمعتقلين

الى من هو الكرم منا مكانة.....شهداء فلسطين

الى هذا الصرح العلمي الفتي والجبار.....جامعة بوليتكنك فلسطين

الى من احتضنتني كل هذا الكم من السنين.....فلسطين الحبيبة



(قل اعملوا فسيرى الله عملكم ورسوله والمؤمنون)

صدق الله العظيم

ألهي لا يطيب لي الليل الا بشكرك ولا يطيب لي النهار الا بطاعتك ..ولا

طيب لي اللحظات الا بذكرك..

ولا طيب لي الاخرة الا بحفوك. ولا طيب لي الجنة الا برويتك

الله جل جلاله.....

لا بد لنا ونحن نخطو خطواتنا الأخيرة في الحياة الجامعية من وقفة
نعود الى احوام قضيناها في رحاب الجامعة مع أساتذتنا الكرام الذين
قدموا لنا الكثير باذلين بذلك جهودا كبيرة في بناء جيل الغد
لتبعض الأمة من جديد....

وقبل ان نمضي نقدم أسمى آيات الشكر والامتنان والتقدير والمحبة
الى الذين حملوا اقدس رسالة في الحياة....الى الذين مهدوا لنا
طريق العلم والمعرفة

الى جميع أساتذتنا الأفاضل.....

"كن عالما ... فان لم تستطع فكن متعلما ، فان لم تستطع فأحب
العلماء، فان لم تستطع فلا تبغضهم"

ونخص بالتقدير والشكر الأبج الروحي الذي علمنا التفاؤل والمضي
الى الامام، الى من رحمانا وحافظ علمينا، الى من وقوفه الى جانبنا عندما
ظلنا الطريق....

الدكتور ياسر عيسى

الذي نقول له بشراك قول رسول الله صلى الله عليه وسلم:

"ان الحوت في البحر، والطير في السماء، ليصلون على معلم الناس

الخير"

Abstract

This study was conducted to determine the extent to which restaurants in Hebron met the health and safety requirements of the Palestinian Ministry of Health .

And the proposal and design of a list of reliable and applicable standards in the classification of restaurants approved by the Palestinian Ministry of Health and the accredited bodies to be followed in the licensing process of restaurants.

A cross-sectional design was adopted in order to describe the current situation of restaurants at this period of time. To collect data required for designing and establishing a classification tool (instrument) a checklist had been developed based on the procedures followed in different regional countries mainly in Gulf states. This checklist was developed to cover all items related to in-door and out-door environment of the restaurants including: infrastructure requirements, raw food receiving and storage, food preparation, cooked food presentation and keeping, staff personal hygiene, environmental workers condition, medical and health check-up for workers, and inspection conducted by the authorized parties mainly the ministry of health. A list of licensed restaurants (about 110 restaurants) were collected from the Hebron Municipality and the environmental health department at Hebron Public Health directorate. Based on this list 50 restaurants were randomly selected (convenience sample) taking into account to include different levels of restaurants (i.e. high class, falafel, sandwiches, and quick meals). All questionnaires were filled in by conducting face to face interviews with the restaurants' owners in addition to the observations that took by the researchers.

Findings of our study shown that:Where the results showed a very significant improvement with regard to the reality of restaurants in the city of Hebron after what happened in last summer of the This study was conducted to determine the extent to which restaurants in Hebron met the health and safety requirements of the Palestinian Ministry of Health .

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We can conclude that the levels of commitment were varied among studied restaurants but in general it was found that the main core of health conditions requirements was adopted by majority of studied restaurants which gives an indication that continuous inspection and monitoring conducting by the ministry of health inspectors and the last actions that took place by the ministry of health including closing restaurants which not follow these requirements and had a potential risk to consumers' health could be the main factor standing behind this result.

Moreover, and based on the findings the study recommends that a classification system should be adopted and be applied in order to give the real picture of all existed restaurants and a written licensing and inspection guideline should be followed by the authorized parties mainly the ministry of health.

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List of Abbreviations

No	Symbol	Shortcuts
1	WHO	World health organization
2	FOF	From farm to fork
3	MOH	Ministry OF Heath

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Chapter One

Research Background

1.1 Introduction

According to the human right declaration in 1985 people have the right to eat a safe and clean food, food that cannot make any harm to them. It was estimated that more than 20,000 death among children occurred due to food poisoning. Based on the declaration all governmental and non-governmental agencies are indeed to assure that all food staffs that delivered to their people should be in high quality and enough quantities. This assurance could not be achieved without criteria and standards that should be followed in each step in preparing and presenting food. As it become clear mainly in these days our life became very fast due to the situation in which people are always busy and do not have enough time to prepare their food (i.e., shopping the raw materials, transporting, storing, preparing, and then cooking). This long time can be saved by go to fast food (i.e., restaurants). Again, to the human right declaration, people have the right that food staffs that presented to them should not be harm and have to be safe.

Prepared food went through a very long chain in each step the chance to be contaminated is expected, so the food safety is covered food from farm to fork. In order to protect food during preparation to be contaminated several standards and conditions should be followed in order to keep people lives and prevent diseases that can be occurred due to this contamination.

Regionally and worldwide, every days we read in the news that the authorized bodies taken action against unfit food and stopped restaurants. Different food production companies also releasing recalls when they received a complaint or they discovered that their productions are contaminated. In Palestine like other parts of the world and recently the Ministry of Health in Palestine with other monitoring authorities conducted intensive inspections on restaurants in West Bank. The authorities closed some restaurants in Hebron District due to uncommitted to the Palestinian standards and health conditions that should be available in those restaurants.

For the above, this study was designing to investigate to what extent restaurants in Hebron meet the Palestinian standards required for working in preparing food based on FOF. In the following chapters we will present the theoretical framework and literature review related to food and its safety, the previous studies investigated this issue, research methods we followed, and the expected results that could be after conducting this study.

1.2 The Problem statement

Food and feeding is very important to our lives, we cannot live without food. Today, depending on the ready food is common everywhere and there is an increasing demand for fast food (i.e., restaurants). The idea of conducting this study became from the last tragedy actions taken against some restaurants in Hebron city because of failing in meeting the Palestinian standards and health conditions. This study will answer the following main research question: **To what extent restaurants in Hebron city meet with and apply the Palestinian standards and regulations in relation to food safety?**

By answering the following sub-questions?

- 1) Do the Palestinian ministry of health and other monitoring parties have written and credited standards that followed in licensing procedure of restaurants?
- 2) To what extent restaurants in Hebron City meet the standards for location and building infrastructures.
- 3) The extent to which restaurants comply with the conditions of worker?
- 4) How satisfied are the restaurants comply with the equipment characteristics and conditions?
- 5) The extent to which restaurants comply with the conditions for preparation, cooking, presenting, and delivering of food?
- 6) How satisfied are the restaurants comply with the food storage facilities' requirements?
- 7) The extent to which restaurants comply with the conditions of cleaning and disinfection?
- 8) What are the main components of the proposed classification/rating system for classifying and rating restaurants in Hebron District and how can this system can be applied?

1.3 Objectives of the study

This study aimed to achieve the following objectives:

- ❖ To identify the conformity of restaurants to the health and safety conditions of food in the city of Hebron.
- ❖ To create a database of restaurants and food.
- ❖ To propose and design a list of reliable standards in the classification of restaurants.

1.4 Importance of the study

- 1) Theoretically, studying this topic is very important as it is at least to be the first scientific study that deal with it .This study can form a framework for future research in the same topic. In theory, it is to the real environmental and health status of restaurant and the quality of them to their customer. This importance is very useful for monitoring bodies who do check for all restaurant to serve as a guideline for inspection.
- 2) In practice, the finding of this study will contribute in forming a database for all restaurant in Hebron city with all database-required data on which monitoring and inspection can be more realistic and systematic. This database can be used in future for other reasons beyond this study. At this moment and the second important aim of this study is to use all gathered data in the classification system on which classification can be made.

1.5 Terminology

Food safety: refers to limiting the presence of those hazards whether chronic or acute, that may make food injurious to the health of the consumer.[1]

Food chain : extends from the farm, or primary production, to the final consumer(“from the farm to the table”) and includes processing, manufacturing ,transformation, packaging, storage, transportation, distribution, and sale and/ or provision of food products.[2]

Restaurant: An establishment other than a boarding house where meals which are prepared therein may be secured by the public.[3]

1.6 Component of study

- ❖ The temporal Determinant: is two semesters from the beginning of the September, 2018 to the end of May, 2019 .
- ❖ Site determinant : Hebron City.
- ❖ Inhabitant determinant: restaurants’ owners and employees.

1.7 Action plan

Table (1.1) shows action plan for the first semester.

Table (1.1): Action plan for the first semester.

<u>Task</u>	<u>First month</u>				<u>Second month</u>				<u>Third month</u>			
	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th
	Week	week	week	week	Week	week	week	Week	week	Week	Week	week
Identifying Project idea												
Basis of Project concept												
Preparing the proposal												
Compilation of studies and information												
Literature review												
Design Questionnaire												

Table (1.2) shows action plan for the first semester.

Table (1.2): Action plan for second semester

<u>Task</u>	<u>First month</u>				<u>Second month</u>				<u>Third month</u>			
	<u>1st</u>	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th
	week	Week	Week	week	Week	week	week	Week	Week	Week	week	week
Field visit to restaurants to fill out questionnaire												
Analyze the questionnaire and sort the results												

1.8 literature review

In this section we will present the most studies conducted in relation to our topic including local, regional and worldwide studies.

1.1.1 Claudia M. Balzaretto , et al., 2015 : Food safety in food services in Lombardy: proposal for an inspection-scoring model – Italy.

The purpose of this study was to elaborate a checklist with an inspection scoring system at national level in order to assess compliance with sanitary hygiene requirements of food services. The inspection scoring system was elaborated taking into account the guidelines drawn up by NYC Department of Food Safety and Mental Hygiene. Moreover the checklist was used simultaneously with the standard inspection protocol adopted by Servizio Igiene Alimenti Nutrizione (Servizio Igiene Alimenti Nutrizione - Ss. I.A.N) and defined by D.G.R 6 March 2017 – n. X/6299 Lombardy Region. Ss. I.A.N protocol consists of a qualitative response according to which we have generated a new protocol with three different grading: A, B and C . The designed checklist was divided into 17 sections. Each section corresponds to prerequisites to be verified during the inspection. Every section includes the type of conformity to check and the type of violation critical or general. Moreover, the failure to respect the expected compliance generates 4 severity levels that correspond to score classes. A total of 7 food services were checked with the two different inspection methods. The checklist results generated a food safety score for each food service that ranged from 0.0 (no flaws observed) to 187.2, and generates three grading class: A (0.0-28.0); B (29.0 - 70.0) and C (>71.00). The results from the Ss. I. A. N grading method and the checklist show positive correlation ($r=0.94$, $P>0.01$) suggesting that the methods are comparable. Moreover, our scoring checklist is an easy and unique method compared to standard and allows also managers to perform effective surveillance programs in food service .[4]

1.1.2 Norrakiah Abdullah Sani., et al, 2014: Knowledge, attitudes and practices of food handlers on food safety in food service operations at the Universiti Kebangsaan Malaysia- Malaysia.

This study was conducted to determine the level of knowledge, attitudes and practices of food handlers in food service operation at the main campus of Universiti Kebangsaan Malaysia (UKM) regarding food safety. Data were collected from 112 food handlers through questionnaires which consisted of questions about knowledge, attitudes and practices. The results showed that there was significantly positive correlation among the three levels and respondents possess good scores for knowledge (19.68 ± 3.87) about personal hygiene, foodborne diseases and temperature control of food; for attitudes (89.26 ± 8.66) on safe food handling, and for practices (90.02 ± 8.23), specifically for appropriate hand washing, use of gloves in food preparation and prevention of food hazards. About 73.2% of respondents never attend any training related to food safety and majority show poor knowledge of pathogens associated with disease-causing agents as well as critical temperatures for storage of ready-to-eat foods. Therefore, effective and ongoing training on food safety and hygiene must be given to all food service employees to ensure the safety of food provided [5] .

1.1.3 Diogo T.daCunha., et al.,2014 : Inspection Score and Grading System for Food Services - Brazil

The objective of this study was to verify the characteristics of food safety inspections, considering risk categories and binary scores. A cross-sectional study was performed with 439 restaurants in 43 Brazilian cities. A food safety checklist with 177 items was applied to the food service establishments. These items were classified into four groups (R1 to R4) according to the main factors that can cause outbreaks involving food: R1, time and temperature aspects; R2, direct contamination; R3, water conditions and raw material; and R4, indirect contamination (i.e., structures and buildings). A score adjusted for 100 was calculated for the overall violation score and the violation score for each risk category. The average violation score (standard deviation) was 18.9% (16.0), with an amplitude of 0.0 to 76.7%. Restaurants with a low overall violation score (approximately 20%) presented a high number of violations from the R1 and R2 groups, representing the most risky violations. Practical solutions to minimize this evaluation bias were discussed. Food safety evaluation should use weighted scores and be risk-based. However, some precautions must be taken by researchers, health inspectors, and health surveillance departments to develop an adequate and reliable instrument.[6]

1.1.4 Buchholz U1., et al ., 2002 : A risk-based restaurant inspection system in Los Angeles County- los Angeles

This study was conducted in Los Angeles where The majority of local health departments perform routine restaurant inspections. In Los Angeles County (LAC), California, approximately \$10 million/year is spent on restaurant inspections. However, data are limited as to whether or not certain characteristics of restaurants make them more likely to be associated with foodborne incident reports. We used data from the LAC Environmental Health Management Information System (EHMIS), which records the results of all routine restaurant inspections as well as data regarding all consumer-generated foodborne incidents that led to a special restaurant inspection by a sanitarian (investigated foodborne incidents [IFBIs]). We analyzed a cohort of 10,267 restaurants inspected from 1 July 1997 to 15 November 1997. We defined a "case restaurant" as any restaurant with a routine inspection from 1 July 1997 to 15 November 1997 and a subsequent IFBI from 1 July 1997 to 30 June 1998. Noncase restaurants did not have an IFBI from 1 July 1997 to 30 June 1998. We looked for specific characteristics of restaurants that might be associated with the restaurant subsequently having an IFBI, including the size of restaurant (assessed by number of seats), any previous IFBIs, the overall inspection score, and a set of 38 violation codes. We identified 158 case restaurants and 10,109 noncase restaurants.

In univariate analysis, middle-sized restaurants (61 to 150 seats; n = 1,681) were 2.8 times (95% confidence interval [CI] = 2.0 to 4.0) and large restaurants (>150 seats; n = 621) were 4.6 times (95% CI = 3.0 to 7.0) more likely than small restaurants (< or =60 seats; n = 7,965) to become case restaurants. In addition, the likelihood of a restaurant becoming a case restaurant increased as the number of IFBIs in the prior year increased (chi² for linear trend, P value = 0.0005). Other factors significantly associated with the occurrence of an IFBI included a lower overall inspection score, the incorrect storage of food, the reuse of food, the lack of employee hand washing, the lack of thermometers, and the presence of any food protection violation. In multivariate analysis, the size of restaurant, the incorrect storage of food, the reuse of food, and the presence of any food protection violation remained significant predictors for becoming a case restaurant. Our data suggest that routine restaurant inspections should concentrate on those establishments that have a large seating capacity or a poor inspection history. inspection guidelines could lead to an increased efficiency and perhaps cost-effectiveness of local inspection programs.[7]

1.1.5 Nasraween, et al ., 2018 : Food Safety Knowledge Among Chicken Shawerma Food Handlers in Amman-Jordan .

This study aimed to assess the food safety knowledge among chicken shawerma food handlers in Jordan. Methods. Forty chicken shawerma restaurants in Amman were selected randomly and 120 food handlers (Egyptians 53%, Jordanians 26% and Syrians 19%) were interviewed using a structured questionnaire. Descriptive and multivariate data analysis was conducted to assess their knowledge about food safety. Results. Low overall mean score of food safety knowledge (40%); the mean percent of correct answers about transportation, receiving of chicken shawerma, storage, preparation, selling, and controlling microorganisms were: 63%, 54%, 45%, 31%, and 26%, respectively. Ninety percent of the participants had no previous training in food safety concepts. Better food safety knowledge was significantly associated ($p > 0.05$) with higher educational levels, receiving special training in food safety and having a Jordanian nationality. Conclusions. This study recommends establishing a comprehensive food safety program in Jordan to build the capacity of the food handlers and enforce periodic evaluation of their food safety knowledge and evidence-based best practices .[8]

1.1.6 Aly El Sheikha .et al ., 2015 : Food Safety Issues in Saudi Arabia – Saudi Arabia .

In this study the Food borne outb

reaks have become a major challenge in food safety, in general, and for safer food supply chains, in particular. In Saudi Arabia, food poisoning is becoming a very important health problem, Salmonella species is the most important pathogen, but due to the extensive effort carried by the health authorities to prevent or eradicate communicable diseases, new pathogens are now emerging such as Escherichia coli and Norwalk like viruses. The implementation of food safety programs in the food industry and improvements in hygiene education for people working with foods have effectively decreased or eliminated some food borne diseases from Saudi Arabia. Common concerns are the diversity of microorganisms and the ability of food borne pathogens adapt to a new environment as these are likely to increase the degree of difficulty for surveillance and prevention of food borne diseases. This review paper highlights the present situation of food safety in Saudi Arabia and what is the key of magic to avoid all the challenges facing food safety to reach a healthy food finally .[9]

1.1.7 Essam Ahmed Khatib .,et al ,2005: The reality of restaurants in Ramallah and Al-Bireh Governorate Food safety and quality-Ramallah

This study aims to identify the reality of restaurants in Ramallah and Al-Bireh Governorate in Palestine. The availability of infrastructure, the area of restaurants, the food safety and the extent of their commitment to the basics suitable for dealing with foodstuffs at different stages, and some of the characteristics selected for workers in Restaurants, instructions received by staff, training and hygiene in restaurants, as well as. Identification of the results of tests on the biological quality of food samples in restaurants during the years 2003-2005 and The results of this study show that there is a lack of infrastructure for a large percentage of restaurants. Especially in the camps, villages and towns, and the small area of many of them. There are non-existent practices. Is not suitable for the nature of this profession, and all of this has been reflected on the quality of foods examined from restaurants, with a high percentage of samples contaminated and unacceptable in 2003 and 2005, and the proportion of pollution was lower in 2004. It was also high.[10]

Chapter Two

Theoretical framework

In this chapter we will present the theoretical framework and the literature review related to the research topic. It will be composed of definition of food, food safety, and food chain components and requirements.

2.1 Theoretical framework

2.1.1 Food

Is any substance consumed to provide nutritional support for the body. It is usually of plant or animal origin, and contains essential nutrients, such as carbohydrates, fats, proteins, vitamins, or minerals. The substance is ingested by an organism and assimilated by the organism's cells in an effort to produce energy, maintain life, or stimulate growth. Historically, people secured food through two methods: hunting and gathering, and agriculture. Today, most of the food energy consumed by the world population is supplied by the food industry. Food safety and food security are monitored by agencies like the International Association for Food Protection, World Resources Institute, World Food Programme, Food and Agriculture Organization, and International Food Information Council.[11]

2.1.2 Food safety

Food safety refers to limiting the presence of those hazards whether chronic or acute, that may make food injurious to the health of the consumer. Food safety is about producing, handling, storing and preparing food in such a way as to prevent infection and contamination in the food production chain, and to help ensure that food quality and wholesomeness are maintained to promote good health.[1]

Food safety is everybody's concern, and it is difficult to find anyone who has not encountered an unpleasant moment of foodborne illness at least once in the past year. Foodborne illnesses may result from the consumption of food contaminated by microbial pathogens, toxic chemicals or radioactive materials. Food allergy is another emerging problem. While many foodborne diseases may be self-limiting, some can be very serious and even result in death. Ensuring food safety is becoming increasingly important in the context of changing food habits, popularization of mass catering establishments and the globalization of our food supply. As our food supply becomes increasingly globalized, the need to strengthen food safety systems in and between all countries is becoming more and more evident. That is why WHO is promoting efforts to improve

food safety, from farm to plate (and everywhere in between) on World Health Day, 7 April 2015. The World Health Day 2015 slogan is: “From farm to plate, make food safe”.^[1]

The informal food production and marketing system is still strong in most countries of the South-East Asia Region, which presents challenges for enforcement of food safety regulations. As a result, instances of food adulteration and contamination can occur. Traditionally, societal preferences call for hot and well-cooked food, and even milk is boiled (pasteurized). These habits are partially responsible for preventing foodborne infections. Street food is popular in urban settings in many countries. Hygienic conditions are improving, provided that potable water supply and clean facilities are ensured by municipal authorities. The introduction of bottled drinking water and its popularity in urban areas has contributed to prevent waterborne and diarrheal diseases in countries with inconsistent water treatment. Political awareness and consumer education on food safety will help strengthen enforcement of food standards, improve hygienic practices, and prevent foodborne illnesses. The “WHO Five keys to safer food” serve as the basis for educational programmers to train food handlers and educate the consumers. They are especially important in preventing foodborne illness. The Five keys are as follows.^[1]

Keep food surfaces clean. Wash all utensils, plates, platters, and cutlery as soon as used.

- 1) Separate raw food from cooked food.
- 2) Cook food thoroughly, to the appropriate temperature.
- 3) Keep food at safe temperatures, both for serving and storage.
- 4) Use safe water and raw materials.

Ensuring food safety starts with production, at the farm level. In this regard, misuse of agro-chemicals, including pesticides, growth hormones and veterinary drugs may have harmful effects on human health. The microbial and chemical risks could be introduced at the farm-level (e.g. using water contaminated by industrial waste or poultry farm waste for irrigation of crops). Good agricultural practices should be applied to reduce microbial and chemical hazards. Organic farming (without the use of pesticides) has been promoted in many countries of the South-East Asia Region, as there is a significant segment of health-conscious people, particularly in urban settings. Although organic products are expensive as compared to commonly available food items, there is a tendency among health-conscious consumers to eat less, but buy organic foods.^[1]

Ensuring food safety requires due attention during harvest, transport, processing, storage and finally during food preparation and storage by consumers. Processed, frozen or ready-to-eat food is gaining popularity in recent years due to changing food habits, product diversification, busy lifestyle and mass production practices. In urban settings, there is a growing tendency to buy meat, milk and vegetables on the weekend and store these items in the freezer or refrigerator. Microwave ovens are often used for reheating of food. However, while using a refrigerator and microwave are part of daily life in urban settings, most users and food handlers rarely have a chance to learn how to safely store and reheat food. We have, therefore, developed a collection of questions and answers on food safety, considering this knowledge gap among consumers and food handlers, with a specific focus on concerns of regional importance. These questions and answers include topics such as food adulteration and falsification (food fraud), unhealthy and unsafe food-handling practices in food markets and at home, and food allergies.[1]

2.1.3 Food from farm to fork (Condition of food production)

2.1.3.1 Food chain

The food chain extends from the farm, or primary production, to the final consumer (“from the farm to the table”) and includes processing, manufacturing, transformation, packaging, storage, transportation, distribution, and sale and/or provision of food products. At each of these stages, there is a responsibility to keep food under the same safety conditions and appropriateness until the moment of its consumption. The main purpose of food hygiene is thus, to ensure all the necessary conditions and measures required to guarantee that food is safe and appropriate at all stages of the food chain to prevent food contamination and reduce the risk of acquiring food borne diseases . [2]

2.1.3.1.1 Soil quality

In organic farms, having the right type of soil that is nutrient-rich is a major step to growing high-quality produce. The soil needs to be rich in nutrients such as phosphorus, nitrogen potassium and other micronutrients. It also needs to be alive with microorganisms that will allow the nutrients to be usable by plants. To maintain the rich soil that is ideal for fresh produce, farmers use a variety of techniques, including planting cover crops on the farm in the off-season and tilling natural compost into the soil.[12]

2.1.3.1.2 Planting (cultivation)

The process of planting crops in farms has some complex aspects to it and also requires some sophisticated technology. Technology like laser leveling is used to tilt beds in the farm to maximize drainage; GPS technology is also used to ensure that rows of seeds remain even while providing efficient placement of irrigation systems. A few weeks after the soil has been tilled, and the beds are ready for planting, machines plant seeds into the soil.[12]

2.1.3.1.3 Nurturing the Crops

Once the seeds have been sowed, the growing cycle begins and lasts anywhere from three to six weeks (depending on the crop). During this time, the plants are nurtured and taken care of consistently. Even though soil preparation is an important part of the process, nurturing processes like irrigation are a crucial part of growing high-quality crops.

The well-cultivated baby greens are protected from pests and weeds either by using safe herbicides and pesticides, or utilizing cover crops and drip irrigation systems to keep weeds at bay. Depending on where the crops are grown and the season, as well as the effectiveness of the protection methods, the baby greens could take anywhere from 21 days to 45 days to grow to complete maturity.[12]

2.1.3.1.4 Picking and Storage

When the planted crops are ready to be harvested, farmers consider both timing and temperature. Some vegetables need to be harvested before it gets too hot and their leaves become too soft to pick. Groups of people work with picking machinery, such as harvesters. They drive the machine and steer it, putting the mechanically picked greens into storage containers like plastic totes.

These baby greens are then stored under certain temperatures. Lettuce, for example, needs its leaves to stay in a 38°F cold chain from the time of processing until they are bought at the stores by consumers. This is done to maximize the edible lifespan of the greens, which is approximately 21 days from harvest to degradation.[12]

2.1.3.1.5 Processing and Packaging

Once trucks arrive from the field with picked leaves, a quality assurance specialist inspects the leaves in each of the totes to decide whether the produce is acceptable. If approved, the totes,

filled with the vegetables, are sent to a processing facility where they are washed. Some large farms could process over 2 million baby greens on a weekly basis.[12]

Employees who work at the beginning of wash lines sort through the recently arrived fresh veggies to identify for unwanted parts and impurities such as roots and leaf clumps. Then, the fresh produce is sent into to be washed in chlorinated water, cleaning them of impurities to help extend the shelf life.[12]

The greens are then placed in plastic bags that have different permeability levels, depending on the needs of the particular leaves. Spinach, for example, requires plenty of oxygen. As a result, the spinach bags have more permeability when compared to bags utilized for other vegetables.[12]

At regular time intervals, samples are inspected from processing lines by quality-control specialists. They take a good look at important characteristics, such as the temperature, quality of the product and the quantity of air in the bags. When they've been placed into packages, baby greens are transported to a storage area where they will eventually be picked up and transported to grocery stores.[12]

2.1.3.1.6 Transportation and storage

Owner production lines , who are contracted to drive their refrigerated trucks to the processing facility, handle a significant amount of the delivery of crops from farms. Farms usually have regulations in place to ensure that fresh produce is promptly picked up from the facility. If things don't go as scheduled, and fresh produce is still sitting in the facility close to the end of its edible lifespan. When this occurs, the produce is either tilled into the ground or donated. Restaurants and grocery stores schedule pick up or delivery of produce from the distribution centers, usually within a day of its arrival.[12]

2.1.4 Health conditions for food preparation

2.1.4.1 Safe food preparation

Below is the guideline to keep food as safe as possible:[13]

- 1) Close up of a chef's hands preparing leafy greens Wash hands and surfaces often using hot, soapy water. Wash your hands before and after you handle food or utensils, especially raw meat, poultry, fish, or eggs.
- 2) Wash all fruits and vegetables before eating.
- 3) Separate raw, cooked, and ready-to-eat foods. Keep raw meat, poultry, fish, or eggs away from other foods to prevent cross-contamination. If possible, use separate cutting boards for these foods. If not, be sure to wash cutting boards carefully with soap between uses.
- 4) Cook foods to a safe temperature using a food thermometer. Uncooked or undercooked animal products can be unsafe.
- 5) Keep hot foods hot (above 140 degrees) and cold foods cold (below 40 degrees) to prevent bacteria growth. Refrigerate foods within two hours of purchase or preparation (one hour if the temperature is higher than 90 degrees).
- 6) When in doubt, throw it out. If you are not sure that food has been prepared, served, or stored properly, throw it out. If food has been left out for more than two hours, throw it out. Eat cooked leftovers within four days.

2.1.4.2 Safe food storage and display

To safely store and display food, you should follow these tips:[14]

- 1) Keep raw foods and ready-to-eat foods separate, to avoid cross-contamination
- 2) Store food in clean, food-grade storage containers
- 3) Don't store food in opened cans
- 4) Make sure food storage containers have not been used to store things other than food, and wash and sanitize them before use
- 5) Don't reuse containers that are only meant to be used once
- 6) If a reusable container is in poor condition, throw it out
- 7) Cover food with tight-fitting lids, foil or plastic film, to protect the food from dust, insects and cross-contamination
- 8) Wash and rinse any garnishes used on food

- 9) Store food in areas specially designed for food storage, such as refrigerators, cool rooms, pantries and food storerooms
- 10) Never store food on the floor or on pallets, or in areas containing chemicals, cleaning equipment, clothing or personal belongings
- 11) Remove and avoid using foods that are past their use-by dates, spoiled, or are in damaged containers or packaging
- 12) Know about and avoid the temperature danger zone - Bacteria grow quickly in high-risk foods that are kept at temperatures between 5 °C and 60 °C.
- 13) Be trained in safe food handling and preparation.

2.1.4.3 Healthy cooking

When preparing food, aim to preserve the nutrient value of the food and utilize healthy fats, reasonable portions, and whole foods. Here are a few tips:[13]

- 1) Use healthy cooking methods such as steaming, broiling, grilling and roasting. Frying requires adding fat to achieve the desired results and deep-fried foods add considerable fat to the American diet.
- 2) Cook foods in as little water and for as short a period of time as possible to preserve all water soluble vitamins (Bs and C).
- 3) Use a variety of herbs and spices for additional flavor rather than relying on salt alone.
- 4) Avoid packaged or processed foods, which are likely to contain added salt, sugar and fats. Recognize that consuming these foods increases your intake of salt, sugar, and fats considerably (often without knowing specifically what or how much). As we eat more and more processed foods, we eat less of the phytochemicals and nutrients our bodies need.

2.1.5 Transmission of contamination in foods (cross contamination)

Raw food must be kept separate from cooked and ready-to-eat food. Raw food may contain bacteria, which causes food poisoning.[14]

2.1.5.1 Cross-contamination

happens when cooked or ready-to-eat food contacts raw food. Raw food should always be stored below ready-to-eat or cooked food in refrigerators and display cabinets. This way, juices from the raw food cannot drip onto cooked food.[14]

Cross-contamination can also happen if you use dirty knives, chopping boards or other equipment. If possible, don't use the same equipment when preparing raw food, and cooked and ready-to-eat food. Thoroughly clean and sanitize equipment after each use.

Bacteria can be transferred to food from your hands. Thoroughly wash and dry your hands before handling food, and between handling raw food and cooked or ready-to-eat food. Also use clean, sanitized utensils (tongs, spoons, spatulas) to handle cooked or ready-to-eat food.

2.1.5.2 Gloves

Disposable gloves can help prevent cross-contamination. The same precautions should be taken when handling raw food, and cooked or ready-to-eat foods. Wash and dry your hands thoroughly before putting on gloves, and always use fresh gloves.

Change your gloves:[14]

- 1) At least once every hour
- 2) If they become contaminated
- 3) If they tear
- 4) When switching between handling raw and ready-to-eat foods
- 5) When changing tasks
- 6) After taking the rubbish out
- 7) After sweeping, mopping and cleaning.

2.1.5.3 Temperature danger zone

The temperature danger zone is between 5 °C and 60 °C. Bacteria grow quickly in high-risk foods that are kept in this temperature range.[14]

2.1.5.4 Cold food storage

You need to keep cold foods at 5 °C or colder, and keep frozen foods frozen solid during storage at -15 °C or colder. Cool rooms, refrigerators and freezers must have proper thermometers, and temperatures should be checked regularly.[14]

2.1.5.5 Hot food preparation and display

Hot food must be kept at 60 °C or hotter. Bains-marie and other hot food holders are designed to keep food at this temperature. Do not use bains-marie and similar equipment to heat food. If this

equipment is used for heating food, the food will spend too long in the temperature danger zone. Before placing food in the bain-marie, make sure the food is thoroughly cooked. Ensure that the center of the cooked food has reached 75 °C. Most bacteria are killed when food is cooked properly.[14]

Some tips for safely using bains-marie include:[14]

- 1) Preheat bains-marie before use and operate them on the highest temperature setting
- 2) Make sure the temperature of the food does not fall below 60 °C
- 3) Use a clean thermometer to check the temperature of the food
- 4) Do not overfill bain-marie trays, because the temperature of the food could fall below 60 °C.

2.1.5.6 Cooling food

Food that has been cooked should not be left out to cool for more than 1 hour. As soon as food has cooled, place it in the refrigerator or freezer.

Note that large portions of food cool faster if divided into smaller portions.[14]

2.1.5.7 Thawing frozen food

Be sure to keep frozen food frozen solid while it is in the freezer. Thaw food thoroughly before cooking. Bacteria can grow in frozen food while it is thawing, so keep frozen food out of the temperature danger zone. To do this, thaw frozen food on the bottom shelf of the refrigerator (so the juices do not drip onto other foods) and keep it in the fridge until it is ready to be cooked. If using a microwave oven to thaw food, cook it immediately after defrosting. If you have to cook food that is still frozen, make sure that the food is cooked right through, and that its core temperature reaches 75 °C. Do not refreeze food that has been frozen and thawed already. Freezing does not kill bacteria, and live bacteria are still in food when it is thawed again.[14]

2.1.5.8 Food serving and labeling

Store food in clean, food-grade storage containers that are strong enough for the food they contain. If containers are reusable, wash and sanitize them before using them. Do not reuse containers that are only meant to be used once. Food labels or tags can carry bacteria. For cooked and ready-to-eat food, use tags or labels on the trays or containers, and not on the food itself. Be sure not to pierce cooked or ready-to-eat food with tags or labels. When serving food, make sure that all cutlery and crockery is clean and undamaged.[14]

2.1.6 Health requirements for restaurants and kitchen

2.1.6.1 Location and Area

Include:[15]

- 1) The site must be away from unpleasant odors, smoke, dust and other contaminants and not exposed to water immersion. Taking into account the absence of damage or inconvenience to the neighbors (for public stores).
- 2) The approval of the municipality should be taken on the site and the area (for public shops) or for the private shops, the area of all its facilities shall be suitable for the size of the work and the numbers of its visitors.

2.1.6.2 : Building

ought to :[15]

- 1) It is made of bricks and reinforced concrete and allows in tourist places and parks to be designed of aluminum or fiberglass and the like in terms of quality and appearance.
- 2) Design allows design to easily work within it and leads to the application of health methods of regular flow in all stages of the work from the arrival of raw materials until the preparation of meals.
- 3) Insects, rodents and various environmental pollutants, such as dust and smoke, are not allowed in.
- 4) The floors should be made of waterproof, non-absorbent materials that are easy to clean, wash and non-slip. It shall not be affected by detergents or acids used for cleaning. It shall have a flat surface free of apartments and drilling.
- 5) The walls should be painted with oil paint in color, preferably white and smooth and easy to clean. In places of preparation, kitchen, washing, and places where fumes, volatile oils, toilets and hand-washing are rising, the flints (light color) are raised to the ceiling.
- 6) The bishop should be painted with oil paint suitable for smooth cleaning.
- 7) Design of doors of waterproof, non-absorbent waterproof and waterproof materials.
- 8) The windows should be designed in a way that prevents the accumulation of dust and dust and provide a suitable wire mesh to prevent the entry of insects and rodents, and to be non-abrasive materials with smooth, non-absorbent surfaces that are easy to clean.

- 9) The building with all its facilities is well ventilated to prevent high temperatures inside it, condensation of vapors and accumulation of dust and industrial ventilation can be used.
- 10) Lighting is good in all building facilities and industrial lighting can be used.

2.1.6.3 Water resource

Include :[15]

- 1) The water used by the public water supplier must be from a known or safe source that has been proved to be suitable for human consumption on the basis of laboratory analysis and the validity of the water is periodically verified.
- 2) The water tank shall be away from sources of pollution and water shall be taken from it through a network of pipes to the places of use. It shall be cleaned and sterilized periodically.

2.1.6.4 Water courses and laundries

ought to :[15]

- 1) The toilets are equipped with suction fan.
- 2) Provides the appropriate number of toilets for the number of employees.
- 3) Provide the appropriate number of toilets for the repeaters.
- 4) Bathrooms do not directly connect to the preparation and cooking areas or dining halls.
- 5) Provide the appropriate number of hand washrooms and provide soap and paper napkins and prevent the use of towels.
- 6) Provide hot water source.
- 7) Take care of the cleanliness of toilets and hand washbasins.

2.1.6.5 Disposal of waste and water

Include:[15]

- 1) Waste and water shall be discharged into the sewerage system or into a cesspit that is away from the ground reservoirs for drinking water at a distance of not less than 10 meters and at a level of less than half a meter.
- 2) There should be no openings for the inspection rooms in the preparation, cooking, storage or dining hall.
- 3) All sewer openings should be covered with sealed covers. They should not be left open.

2.1.6.6 Equipment

Include :[15]

- 1) All utensils and utensils used for preparing, processing, cooking and serving food must be of good use and in good condition and non-rusting materials.
- 2) Preparation of rooms for preparation, washing and cooking ponds suitable for washing and be of a non-rust and provide tables with smooth surfaces and the surface of one piece for easy cleaning.
- 3) Provide the appropriate number of refrigerators for the preservation of foodstuffs, whether primary or prepared to be submitted to the appropriate temperatures of freezing or freezing.
- 4) Suction fans should be available in the preparation, cooking and dining halls of the appropriate size and size.
- 5) Keep tools, dishes and utensils after washing and drying in private closets.
- 6) Paper or glass cups are used for drinking.
- 7) The shop is equipped with a sufficient number of water heaters.
- 8) Electric lightning should be available for insects and the appropriate number and size.
- 9) Gas and electric stoves and ovens are used and diesel is not used as fuel.
- 10) If coal or fireplaces are to be used, a suitable diameter chimney should be set up with the work volume up from the roof of the neighboring buildings by at least 2 meters so that it does not cause damage to the neighbors with a suction fan to pull the smoke.
- 11) Furnaces should be built of thermal bricks and should not be adjacent to the walls of neighboring residential buildings.

2.1.6.7 Warehouses

Include:[15]

- 1) Provide sufficient metal shelves (coated with suitable paint to prevent rust) and should be the lowest shelf to rise from the surface of the earth by at least 20 cm.
- 2) The food shall be kept in a special warehouse at the appropriate temperature and separate from the warehouse of other materials such as coal, firewood, cleaning materials, insecticides and the like.

- 3) The storage and transport of foodstuffs shall be carried out under conditions that prevent contamination, corruption or damage of containers and shall be kept in a regular and unpackaged manner to facilitate the monitoring process.
- 4) Be careful not to have sources of moisture inside the store so as not to affect the validity of food

2.1.6.8 Safety devices:

Safety requirements should be provided in accordance with the Civil Defense Regulations.[9]

2.1.6.9 General cleanliness

Include : [15]

- 1) Cleaning the shop with all its facilities and the cleanliness of the tools and utensils used should be used and appropriate detergents should be used, taking into account the drying of the pots after washing.
- 2) Care should be taken to clean the places of preparation and processing of meat and vegetables and not to use utensils and tools used in the processing of raw meat and poultry in the processing and preparation of vegetables and fruits that are taken fresh (salads and juices) only after washing well.
- 3) Use paper towels in the cleanliness of the tables of the shop.
- 4) Collection of waste in sealed plastic bags or containers

2.1.6.10 Food hygiene requirements

ought to:[15]

- 1) All local food items shall be prepared for meals
- 2) Preserves food, primary or primary to apply at temperatures
- 3) Frozen food shall be used immediately upon completion of the clearing process (ice thawing) and shall not be refolded again.
- 4) Arrange the food inside the refrigerators to protect them from pollution and prevent the destruction of each other, with no contact with meat, poultry and raw fish for food cooked or freshly eaten.
- 5) All additives for foodstuffs (colors, optimizers, flavors, etc.) shall comply with the standard specifications of each type.

6) No processed foods or beverages from the previous day. Fresh juices are prepared on request.

2.1.6.11 Health requirements to be met by employees (Workers' requirements)

These include:[15]

- 1) Workers must have valid health certificates to prove they are free of infectious diseases.
- 2) All workers against typhoid fever, schizophrenia, or any other immunizations considered by competent health authorities.
- 3) All employees should be well-looked after with full care and cleanliness.
- 4) Not to eat and drink in the places where food is prepared.
- 5) Do not sleep in the workplace.
- 6) Workers should wear a uniform, clean, preferably white, with a head cover.
- 7) Any worker should be removed from the shop where he has a satisfactory condition or appears in his hands with blisters, wounds or skin ulcers, or it is evident that he is infected with a contagious patient. The person responsible for the work must inform the competent health authorities in case of any infectious diseases.
- 8) Provide laundry workers with gloves, shoes with neck and bibs that do not absorb water.
- 9) Workers should wear disposable health gloves when preparing meals and salads.
- 10) The competent authorities may remove any worker from work if he considers that his employment constitutes a danger to public health.

2.1.6.12 Special requirements for kitchens

The area of all its facilities shall not be less than 200 m² The kitchen is divided into two parts:

section One :[15]

It includes three rooms namely:

- 1) reception desk, a room furnished with equipment and decorations for reception.
- 2) warehouse food.
- 3) ware warehouse clean.

Section Two:[15]

The middle section includes three rooms namely:

- 1) Preparation and processing room: related to both the kitchen and the slaughterhouse through the doors of a helicopter.
- 2) room kitchen.
- 3) laundry room and related to the kitchen by a fan door.

2.1.7 Food safety and Monitoring In Palestine(Food safety system in Palestine)

All requirements and regulations related to food safety and regulate the food sector (local food industries, imported staff, exported staff, and food preparing establishments are regulated according to the articles of the Public Health Law no.20/2004 [Appendix 1][16]. The main body who take the responsibility of food safety is the Ministry of Health mainly the department of the environmental health in cooperation with all other monitoring governmental bodies. Recently, an integrated body has been developed under the title of " the national initiative for food safety". This body included all monitoring parties including: ministry of health, ministry of agriculture, ministry of national economy, ministry of finance, customer police, and the institute of Palestinian standards (MOH, Hebron, personal communication, 2018)

Chapter three

Methodology

3.1 Method and procedures

In this chapter, we will provide a complete and detailed description of the method and procedures we have carried out to conduct this study, sample study, study procedures and statistical processing of the data collected to answer the research questions and verify its hypotheses.`

3.2 Study Design

A descriptive analytical study (cross-sectional) in order to answer the research questions and achieving the objectives.

3.3 Study Population

It consists of all restaurants, restaurant owners and workers in restaurants in the city of Hebron (about n=110 restaurants and food establishments).

3.4 The study sample

Fifty restaurants with different levels (mixed sample) had been randomly selected from the list provided by the Hebron Municipality and environmental health department at Hebron Public Health Directorate. The inclusion criteria including that restaurant should be within the border of the Hebron Municipality and currently working and presenting food to customers.

3.5 Study instrument (Data collection)

Preparation for data collection:

Several visits and meetings with the responsible persons who main responsibilities is food safety (ministry of health, Hebron) were conducted in order to prepare for data collection and to design the checklist and list of restaurants and their locations before the official data collection starting. We developed a checklist [Appendix 2] containing different variables related to all restaurants conditions (indoor and outdoor). This checklist was developed based on the Palestinian ministry of health requirements and on regional checklists. All checklists were filled in by the researchers themselves during their visit and interviews (face-to-face interview) with restaurants' owners and employees.

3.6 Validity of the research instrument (checklist)

In order to check for the research instrument validity, the checklist was developed based on the ministry of health license requirements and by using the regional checklist used in Emirates. Also a pilot of 5 pre-official interviews were conducted in order to test the checklist and as a result of this piloting some modifications have been done.

3.7 Data analysis

All collected data were analyzed by using the social package statistical software v.20. Distribution and frequencies were outputs of these analysis to show the distribution of our sample to the variables presented in the checklist that used for data collection.

Also two types of tests used in order to show the real status of studied restaurants: firstly, mean of responses were calculated for each item presented in the checklist and secondly, sum scores were also calculated to show how much the studied restaurants achieved from the required total scores for each item. Chi-square test was used in order to show the distribution of studied restaurants with their stands in relation to each item presented in checklist.

Chapter Four

Result and Discussion

In this chapter we will present and discuss the results we have obtained .

4.1 Descriptive results of restaurants

4.1.1. Building

The floor

Table (4.1) : Status of restaurants floor and its environmental characteristics

		Frequency	Percent%
floor covered by isolation materials, simple clean, and preventing slipping	Yes	47	97.9
	No	0	0
	partially	1	2.1
The floor with smooth surfaces and no fractions	Yes	45	93.8
	No	0	0
	partially	3	6.3
The supplied with filter for sewage	Yes	48	100.0
	No	0	0
	Partially	0	0
Total		48	100.0

Nearly all studied restaurants were committed to the conditions and standards related to the floor of the restaurants.

Walls and ceilings

Table(4.2) : Status of restaurants walls and ceilings and its environmental characteristics

		Frequency	Percent
walls and ceilings are covered by isolation materials, simple clean and with light color	Yes	48	100.0
	No	0	0
	Partially	0	0
smooth surfaces and no fractions	Yes	45	93.8
	No	0	0
	partially	3	6.3
supplied with filter for sewage	Yes	48	100.0
	No	0	0
	Partially	0	0
Total		48	100.0

Nearly all studied restaurants were committed to the conditions and standards related to the windows and ceilings of the restaurants.

Equipment and instruments

Table (4.3): Status of restaurants equipment and instruments used and their environmental characteristics

		Frequency	Percent
equipment are made of smooth surfaces and simple clean	Yes	47	97.9
	No	0	0
	Partially	1	2.1
using equipment are free from rust and melamine free	Yes	48	100.0
	No	0	0
	Partially	0	0
using equipment made of stainless steel	Yes	47	97.9
	No	0	0
	Partially	1	2.1
different cutting boards for different kinds of food	Yes	45	93.8
	No	0	0
	partially	1	6.2
spaces between equipment to prevent contamination and to be suitable for cleaning	Yes	46	95.8
	No	0	0
	partially	2	4.2
Total		48	100.0

Doors and windows

Table(4.4) : Status of restaurants doors and windows and their environmental characteristics

		Frequency	Percent
doors and windows are cleaned and in a good stand	Yes	47	97.9
	No	0	0
	partially	1	2.1
doors and windows are always closed and supplied with net to eradicate pests	Yes	45	93.8
	No	0	0
	partially	3	6.2
Total		48	100.0

Ventilation and lighting

Table (4.5) : Status of restaurants ventilation and lighting system and their environmental characteristics

		Frequency	Percent
ventilation (all parts are free of smells and steams	Yes	39	81.3
	No	1	2.1
	partially	8	16.7
fans and ventilation devices are cleaned and efficient	Yes	41	85.4
	No	1	2.1
	partially	6	12.5
artificial and natural light are available	Yes	47	97.9
	No	0	0
	partially	1	2.1
Total		48	100.0

Staff Dining room

Table (4.6): Status of restaurants staff dining room and its environmental characteristics

		Frequency	Percent
Having a cleaned and with good conditions dining room for the staff	Yes	23	47.9
	No	16	33.3
	partially	8	16.7
Presence: laundry, hot water, soap and a towel to dry the hands	Yes	31	64.6
	No	14	29.2
	partially	2	4.2
Total		47	98

4.1.2. Staff personal hygiene

Table (4.7) : Status of restaurants staff personal hygiene

		Frequency	Percent
Work clothes are suitable and clean	yes	41	85.4
	partially	5	10.4
	no	2	4.2
The nails are short and the hands are clean	yes	44	91.7
	partially	3	6.3
	no	1	2.1
Respect the ban on employees (jewelry and nail polish)	yes	44	91.7
	partially	1	2.1
	no	3	6.3
The hair is completely covered	yes	19	39.6
	partially	14	29.2
	no	15	31.3
Wash hands properly and when needed	yes	47	97.9
	Partially	1	2.1
	no	0	0
Use gloves and replace them when needed	yes	32	66.7
	partially	9	18.8
	no	7	14.6
Total		48	100.0

4.1.3. Medical monitoring

Table (4.8) : Status of restaurants staff personal medical monitoring and check-up

		Frequency	Percent
Provides a biomedical clinical check-up for the personnel	yes	44	91.7
	partially	2	4.2
	no	2	4.2
Having valid health certificates	yes	44	91.7
	partially	2	4.2
	no	2	4.2
	Total	48	100.0
Full waterproofing for any injury or scratching	Yes	46	95.8
	partially	0	0
	no	2	4.2
Total		48	100.0

4.1.4. Staff Knowledge and training

Table (4.9) : Status of restaurants staff knowledge and training about good hygiene

		Frequency	Percent
Conducting training sessions permanently by specialized persons about good hygiene habits for food workers and about food safety	yes	9	18.8
	partially	8	16.7
	no	31	64.6
Documentation of training	yes	10	20.8
	partially	8	16.7
	no	30	62.5
	Total	48	100.0

4.1.5. Raw materials receiving and food preparation

Raw materials receiving and storage (Simi manufactured and final products)

Table(4.10) : Status of restaurants raw materials receiving and storage

		Frequency	Percent
Receive the products in a clean and separate place from the food preparation areas	Yes	47	97.9
	No	0	0
	Partially	1	2.1
There are enough local storage places	Yes	46	95.8
	No	0	0
	Partially	2	4.2
Storage in high places on the ground	Yes	47	97.9
	No	0	0
	partially	1	2.1
Monitor and record store temperature (temperature below 25 ° C)	Yes	48	100.0
	No	0	0
	Partially	0	0
The materials are stored in a stacked and properly labeled warehouse; there is a manufacturing date and expire date on all products	Yes	47	97.9
	No	0	0
	partially	1	2.1
Proper stock turnover and lack of expired food (fifo)	yes	47	97.9
	No	1	2.1
	Partially	0	0
Food storage separately (by type)	yes	47	97.9
	No	1	2.1
	Partially	0	0
Specify a dedicated and labeled place for expired and unfit products	yes	46	95.8
	partially	1	2.1
	no	1	2.1
	Total	48	100.0

Cooling and freezing sites

Table (4.11) : Status of restaurants cooling and freezing sites

		Frequency	Percent
The cooling and freezing facilities are clean and in good condition	Yes	0	100.0
	No	48	0
	Partially	0	0
All refrigerators and freezers are equipped with properly functioning heat meters	Yes	48	100.0
	No	0	0
	partially	0	0
The temperature of refrigerators and freezers is monitored and recorded daily (the refrigerator temperature should be less than 5 ° C and the refrigerator is less than -18 ° C	Yes	48	100.0
	No	0	0
	partially	0	0
Foods are stocked on stainless steel shelves	Yes	48	100.0
	No	0	0
	partially	0	0
Raw foods are separate from cooked and ready-to-serve foods (storage of cooked and ready-to-serve food on the upper shelves, raw food and eggs on the lower shelves)	Yes	48	100.0
	No	0	0
	partially	0	0
foods appropriately covered	Yes	48	100.0
	No	0	0
	partially	0	0
Use plastic boxes to store vegetables and fruit	Yes	47	97.9
	No	0	0
	partially	1	2.1
The stored materials are properly labeled in refrigerators and freezers, having a date of manufacture and finish date on all products	Yes	48	100.0
	No	0	0
	Partially	0	0
no expired food	Yes	48	100.0
	No	0	0
	Partially	0	0
Total		48	100.0

From the above table (table 4.11), a total of 99.6% of restaurants are committed to the standards related to freezing and refrigerating.

Cross contamination prevention

Table (4.12) : Status of restaurants cross contamination prevention system and tools

		Frequency	Percent
Work in an orderly manner that prevents pollution between departments (no intersections between raw food preparation departments and prepared / ready-made food preparation departments)	Yes	48	100.0
	No	0	0
	Partially	0	0
Cleaning and disinfection of equipment and tools used in raw materials before reuse in finished products (prepared or cooked)	yes	47	97.9
	No	1	2.1
	Partially	0	0
Do not re-provide food leftovers Missing	yes	47	97.9
	System	1	2.1
Wash and disinfect vegetables and fruits before use	Yes	46	95.8
	No	2	4.2
	Partially	0	0
Total		48	100.0

4.1.6.. Cleaning and disinfection

Table (4.13) : Status of restaurants existence of a protocol and a mechanism that is clearly presented (e.g through a poster) concerning cleaning and disinfection and whether the protocol is followed

		Frequency	Percent
The existence of a protocol and a mechanism that is clearly presented (e.g through a poster) concerning cleaning and disinfection and whether the protocol is followed	Yes	37	77.1
	partially	3	6.3
	No	8	16.7
The presence of cleaning equipment for each area	Yes	44	91.7
	partially	2	4.2
	No	2	4.2
Chemical cleaning materials are properly labeled and stored away from food places	Yes	44	91.7
	No	2	4.2
	Partially	2	4.2
Total		48	100.0

4.1.7. Sewage and staff rooms

Table (4.14) : Status of restaurants existence of sewage system and staff room

		Frequency	Percent
Clean toilets equipped with a usable water pump (Siphon)	yes	44	91.7
	partially	1	2.1
	no	3	6.3
The presence of latrines is relatively far from the places where food is prepared	yes	43	89.6
	partially	1	2.1
	no	4	8.3
There is a notice in the staff's bathroom about the mandatory washing of the hands after using the toilet and the proper washing of the hands	yes	33	68.8
	partially	1	2.1
	no	14	29.2
Suitable ventilation in the toilets (window, hood, fan)	yes	44	91.7
	partially	1	2.1
	no	3	6.3
The presence of waste containers opened by the feet and covered	yes	41	85.4
	No	7	14.6
	partially	0	0
Enough lighting in toilets	yes	42	87.5
	partially	1	2.1
	no	5	10.4

	yes	31	64.6
There are clean rooms for changing clothes	partially	1	2.1
	no	15	31.3
Missing	System	1	2.1
Total		48	100.0

4.1.8. Washbasin

Table (4.15) : Status of restaurants and Washbasin

		Frequency	Percent
The presence of washbasin in toilets equipped with running water, liquid soap, hand-dried paper tissues,	yes	40	83.3
	partially	1	2.1
	no	6	12.5
Toilet taps are opened in the elbow (elbow) or foot, or equipped with sensors	yes	31	64.6
	No	17	35.4
	partially	0	0
Tossing of paper-based washbasin in the case of faucets for faucets	yes	17	35.4
	No	31	64.6
	partially	0	0
Lack of air hand dryers	yes	27	56.3
	No	21	43.8
	partially	0	0
	Total	48	100.0

Food washing techniques

Table (4.16) : Status of restaurants and Food washing techniques

		Frequency	Percent
An adequate supply of drinking water is attached to the place where food is washed separate from the laundries	yes	47	97.9
	No	1	2.1
	Partially	0	0
Cleaners are clean and in good condition	yes	47	97.9
	No	1	2.1
	partially	0	0
	Total	48	100.0

4.1.9. Drinking water supply accessibility

Table (4.17) : Status of restaurants and Drinking water supply and sources

		Frequency	Percent
Water supply connected to drinking water network	yes	46	95.8
	partially	1	2.1
	no	1	2.1
The existence of a water tank that is tightly sealed and can be emptied and cleaned periodically	Yes	47	97.9
	partially	0	0
	no	1	2.1
The existence of a well (artesian, rainwater harvesting ...)	Yes	19	39.6
	partially	0	0
	no	29	60.4
The presence of water wells dedicated only for maintenance or watering	Yes	13	27.1
	partially	0	0
	no	35	72.9
Filling of water from a mobile source (tanks)	yes	41	85.4
	partially	1	2.1
	no	6	12.5
There are filters for drinking water	Yes	29	60.4
	partially	0	0
	no	19	39.6
Documented of Periodic maintenance of filters, if any	Yes	30	62.5
	partially	0	0
	no	18	37.5
Total		48	100.0

4.1.10 Waste water and solid waste disposal

Table (4.18) : Status of restaurants and waste water disposal

		Frequency	Percent
Wastewater is connected to the local sewage network (municipalities)	Yes	47	97.9
	partially	0	0
	no	1	2.1
Existence of an independent sewage disposal system	Yes	45	93.8
	partially	0	0
	no	3	6.3
A healthy septic	Yes	3	6.3
	partially	0	0
	no	45	93.8
septic tank is closed to the well if they exist	Yes	2	4.2
	partially	0	0
	no	46	95.8
Total		48	100.0

Solid waste disposal

Table (4.19) : Status of restaurants and solid waste disposal

		Frequency	Percent
Use of clean waste containers, equipped with plastic bags that do not leak, open with feet and covered	Yes	47	97.9
	partially	0	0
	no	1	2.1
An isolated place to store the waste, with suitable ventilation (window, hood, fan) and is constantly cleaned	Yes	48	100.0
	Partially	0	0
	No	0	0
total		48	100.0

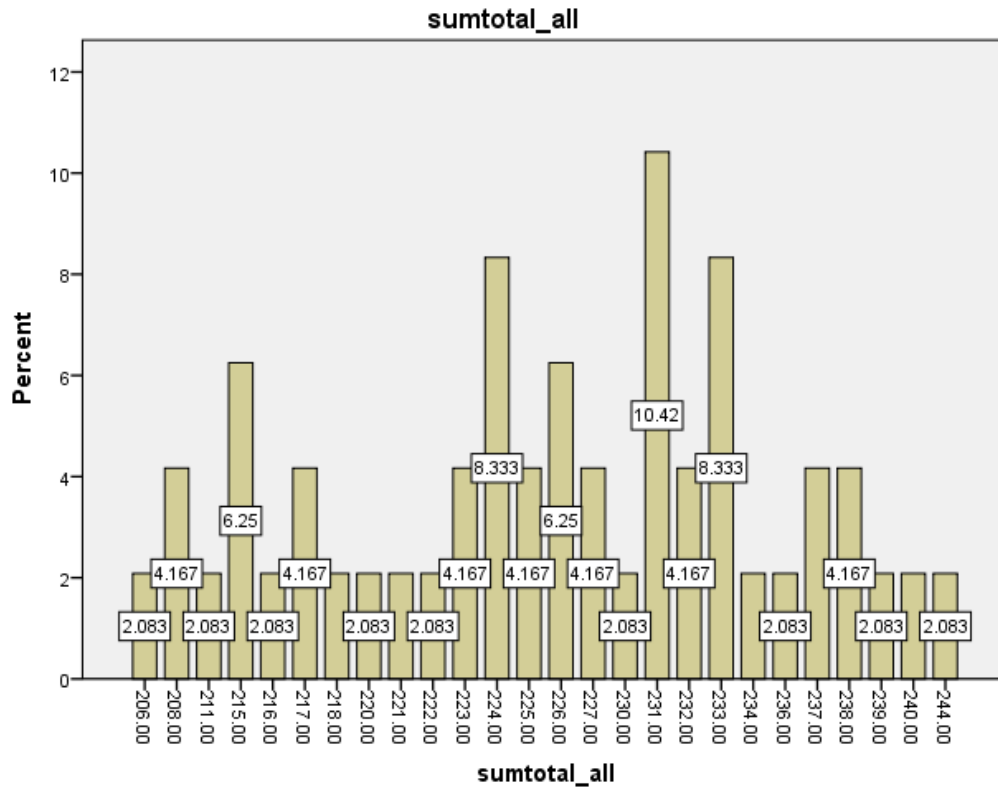
4.1.11 Pest Control

Table (4.20) : Status of restaurants and pest control mechanisms

		Frequency	Percent
The presence of certificates confirming insecticides and rodents spraying every 3-6 months at least	yes	30	62.5
	partially	3	6.3
	no	15	31.3
Vector / insect control operations are carried out by a licensed private company, under the supervision of the food establishment or others	Yes	36	75.0
	partially	0	0
	no	12	25.0
No insects or signs of presence in food preparation and storage	yes	40	83.3
	partially	1	2.1
	no	5	10.4
Missing	System	2	4.2
Use of flying insect capture devices in appropriate places	yes	11	22.9
	partially	5	10.4
	no	32	66.7
Total		48	100.0

The above table shows that the mean of good stands is high (226.18 points) while the minimum point was 206 and the maximum is 244. This means that most studied restaurants were in good stands as shown in figure 1 below.

Figure(4.1): The total sum scores of status of the restaurants in all items



4.2 Mean and Scoring results of restaurants

4.2.1. Mean analysis

Table (4.21) : Mean and level of status of responses to each item in the checklist

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Status
mean1 (The floor)	48	2.67	3.00	2.9722	H
Mean2 (Walls and ceilings)	48	2.33	3.00	2.9792	H
Mean3 (Equipment and instruments)	48	2.40	3.00	2.9833	H
Mean4 (Doors and windows)	48	2.00	3.00	2.9583	H
Mean5 (Ventilation and lighting)	48	2.00	3.00	2.8125	H
Mean6 (Maize for staff)	48	2.00	3.00	2.9792	H
Mean7 (Staff personal hygiene)	47	1.00	3.00	2.2553	M
Mean8 (Medical monitoring)	48	1.50	3.00	2.6910	H
Mean9 (Staff Knowledge and training)	48	1.67	3.00	2.8889	H
mean10 (Raw materials receiving and storage (Simi manufactured and final products))	48	2.33	3.00	2.9722	H
mean11 (Cooling and freezing sites)	48	2.89	3.00	2.9977	H
mean12 (Cross contamination prevention)	48	2.50	3.00	2.9688	H
mean13 (Cleaning and disinfection)	48	1.67	3.00	2.7847	H
Mean14 (Sewage and staff rooms)	48	1.00	3.00	2.6776	H
ymean15 (Washbasin)	48	1.00	3.00	2.2135	M
mean16 (Food washing techniques)	48	2.00	3.00	2.9583	H
mean17 (Drinking water supply accessibility)	48	1.75	3.00	2.4219	H
mean18 (Waste water disposal)	48	1.50	3.00	2.0104	M
mean19 (Solid waste disposal)	48	2.00	3.00	2.9792	H
Mean20 (Pest Control)	48	1.50	3.00	2.2795	M
Valid N (listwise)	47				

Mean (1-1.66 (low), 1.67-2.33 (medium), and 2.34-3.00(high)).

4.2.2. Scoring analysis

Floor

Table (4.22) : Mean and level of status of responses to floor requirements

floor covered by isolation materials, simple clean, and preventing slipping * sum1			sum1		Total
			8.00	9.00	
Partially	Count		1	0	1
	% of Total		2.1%	0.0%	2.1%
Yes	Count		3	44	47
	% of Total		6.2%	91.7%	97.9%
Total	Count		4	44	48
	% of Total		8.3%	91.7%	100.0%
smooth surfaces and no fractions * sum1 cross tabulation			sum1		Total
			8.00	9.00	
Partially	Count		3	0	3
	% of Total		6.2%	0.0%	6.2%
Yes	Count		1	44	45
	% of Total		2.1%	91.7%	93.8%
Total	Count		4	44	48
	% of Total		8.3%	91.7%	100.0%
supplied with filter for sewage * sum1 cross tabulation			sum1		Total
			8.00	9.00	
Yes	Count		4	44	48
	% of Total		8.3%	91.7%	100.0%
Total	Count		4	44	48
	% of Total		8.3%	91.7%	100.0%

91.7% of all restaurants got 9 points of 9 points for the section of the Floor and its environmental health requirements related to: floor covered by isolation materials, simple clean, and preventing slipping, smooth surfaces and no fractions, and supplied with filter for sewage.

Walls and Ceilings

Table (4.23) : Sum of scores of status of responses to walls and ceilings requirements

walls and ceiling are covered by isolation materials, simple clean and with light color * sum2 Crosstabulation		sum2			Total
		7.00	8.00	9.00	
Yes	Count	1	1	46	48
	% of Total	2.1%	2.1%	95.8%	100.0%
Total	Count	1	1	46	48
	% of Total	2.1%	2.1%	95.8%	100.0%
walls and ceiling are with smooth surfaces and no fractions * sum2 Crosstabulation		sum2			Total
		7.00	8.00	9.00	
Yes	Count	1	1	46	48
	% of Total	2.1%	2.1%	95.8%	100.0%
Total	Count	1	1	46	48
	% of Total	2.1%	2.1%	95.8%	100.0%
walls and ceiling made of for ceilings, clean and good stand * sum2 cross tabulation		sum2			Total
		7.00	8.00	9.00	
No	Count	1	0	0	1
	% of Total	2.1%	0.0%	0.0%	2.1%
partially	Count	0	1	0	1
	% of Total	0.0%	2.1%	0.0%	2.1%
Yes	Count	0	0	46	46
	% of Total	0.0%	0.0%	95.8%	95.8%
Total	Count	1	1	46	48
	% of Total	2.1%	2.1%	95.8%	100.0%

95.8% of all restaurants got 9 points of 9 points for the section of the walls, ceilings and their environmental health requirements related to: walls and ceiling are covered by isolation materials, simple clean and with light color, walls and ceiling are with smooth surfaces and no fractions, and walls and ceiling made of for ceilings, clean and good stand.

Equipment's and instruments

Table (4.24.a) : Sum of scores of status of responses to equipment and instruments requirements

		sum3			Total
		12.00	14.00	15.00	
yes	Count	2	1	44	47
	% of Total	4.3%	2.1%	93.6%	100.0%
Total	Count	2	1	44	47
	% of Total	4.3%	2.1%	93.6%	100.0%

93.6% of all restaurants got 15 of 15 points for the section of the equipment's and their environmental health requirements related to its kind of surfaces and way of cleaning.

Table (4.24.b) : Sum of scores of status of responses to equipment and instruments requirements

		sum3				Total
		9.00	12.00	14.00	15.00	
yes	Count	1	2	1	44	48
	% of Total	2.1%	4.2%	2.1%	91.7%	100.0%
Total	Count	1	2	1	44	48
	% of Total	2.1%	4.2%	2.1%	91.7%	100.0%

91.7% of all restaurants got 15 of 15 points for the section of the equipment and their environmental health requirements related to free of rust and melamine.

Table (4.24.c) : Sum of scores of status of responses to equipment and instruments requirements

		sum3			Total
		12.00	14.00	15.00	
Partially	Count	1	0	0	1
	% of Total	2.2%	0.0%	0.0%	2.2%
yes	Count	0	1	44	45
	% of Total	0.0%	2.2%	95.7%	97.8%
Total	Count	1	1	44	46
	% of Total	2.2%	2.2%	95.7%	100.0%

95.7% of all restaurants got 15 of 15 points for the section of the equipment and their environmental health requirements related to having different cutting boards for different foods.

Table (4.24.d) : Sum of scores of status of responses to equipment and instruments requirement

		sum3				Total
		9.00	12.00	14.00	15.00	
Partially	Count	0	1	1	0	2
	% of Total	0.0%	2.1%	2.1%	0.0%	4.2%
yes	Count	1	1	0	44	46
	% of Total	2.1%	2.1%	0.0%	91.7%	95.8%
Total	Count	1	2	1	44	48
	% of Total	2.1%	4.2%	2.1%	91.7%	100.0%

91.7% of all restaurants got 15 of 15 points for the section of the equipments and their environmental health requirements related to presence of spaces between equipments to prevent contamination and easy to clean.

Doors and Windows

Table (4.25) : Sum of scores of status of responses to doors and windows requirements

doors and windows are cleaned and in a good stand * sum4 Crosstabulation		sum4			Total
		4.00	5.00	6.00	
partially	Count	1	0	0	1
	% of Total	2.1%	0.0%	0.0%	2.1%
yes	Count	0	2	45	47
	% of Total	0.0%	4.2%	93.8%	97.9%
Total	Count	1	2	45	48
	% of Total	2.1%	4.2%	93.8%	100.0%
doors and windows are always closed and supplied with net to eradicate pests * sum4 Crosstabulation		sum4			Total
		4.00	5.00	6.00	
partially	Count	1	2	0	3
	% of Total	2.1%	4.2%	0.0%	6.2%
yes	Count	0	0	45	45
	% of Total	0.0%	0.0%	93.8%	93.8%
Total	Count	1	2	45	48
	% of Total	2.1%	4.2%	93.8%	100.0%

93.8% of all restaurants got 6 of 6 points for the section of the doors and windows and their environmental health requirements related to its cleaning and closure and / or with net to prevent entrance of pests into the restaurant.

Ventilation

Table (4.26.a) : Sum of scores of status of responses to ventilations requirements

		sum5			Total
		4.00	5.00	6.00	
No	Count	1	0	0	1
	% of Total	2.1%	0.0%	0.0%	2.1%
partially	Count	5	3	0	8
	% of Total	10.4%	6.2%	0.0%	16.7%
yes	Count	1	1	37	39
	% of Total	2.1%	2.1%	77.1%	81.2%
Total	Count	7	4	37	48
	% of Total	14.6%	8.3%	77.1%	100.0%

77.1% of all restaurants got 6 of 6 points for the section of the ventilation mechanism and their environmental health requirements related to free of smell and steam.

Table (4.26.b) : Sum of scores of status of responses to ventilations requirements

		sum5			Total
		4.00	5.00	6.00	
No	Count	1	0	0	1
	% of Total	2.1%	0.0%	0.0%	2.1%
partially	Count	5	1	0	6
	% of Total	10.4%	2.1%	0.0%	12.5%
yes	Count	1	3	37	41
	% of Total	2.1%	6.2%	77.1%	85.4%
Total	Count	7	4	37	48
	% of Total	14.6%	8.3%	77.1%	100.0%

77.1% of all restaurants got 6 of 6 points for the section of the ventilation mechanism and their environmental health requirements related to cleaning of fans and ventilation devices.

Lightings

Table (4.27) : Sum of scores of status of responses to lighting requirements

		sum6		Total
		2.00	3.00	
partially	Count	1	0	1
	% of Total	2.1%	0.0%	2.1%
yes	Count	0	47	47
	% of Total	0.0%	97.9%	97.9%
Total	Count	1	47	48
	% of Total	2.1%	97.9%	100.0%

97.9% of all restaurants got 3 of 3 points for the section of lighting and their environmental health requirements related to availability of both artificial and natural light in the restaurants.

Staff Dining room

Table (4.28.a) : Sum of scores of status of responses to staff dining room requirements

		sum7				Total
		2.00	4.00	5.00	6.00	
no	Count	13	3	0	0	16
	% of Total	27.7%	6.4%	0.0%	0.0%	34.0%
partially	Count	0	2	6	0	8
	% of Total	0.0%	4.3%	12.8%	0.0%	17.0%
yes	Count	0	1	0	22	23
	% of Total	0.0%	2.1%	0.0%	46.8%	48.9%
Total	Count	13	6	6	22	47
	% of Total	27.7%	12.8%	12.8%	46.8%	100.0%

46.8% of all restaurants got 6 of 6 points for the section of Staff dining room and their environmental health requirements related to its cleaning condition

Table (4.28.b) : Sum of scores of status of responses to staff dining room requirements

		sum7				Total
		2.00	4.00	5.00	6.00	
No	Count	13	1	0	0	14
	% of Total	27.7%	2.1%	0.0%	0.0%	29.8%
Partially	Count	0	2	0	0	2
	% of Total	0.0%	4.3%	0.0%	0.0%	4.3%
Yes	Count	0	3	6	22	31
	% of Total	0.0%	6.4%	12.8%	46.8%	66.0%
Total	Count	13	6	6	22	47
	% of Total	27.7%	12.8%	12.8%	46.8%	100.0%

46.8% of all restaurants got 6 of 6 points for the section of Staff dining room and their environmental health requirements related to Presence: laundry, hot water, soap and a towel to dry the hands.

Staff personal hygiene

Table (4.29.a) : Sum of scores of status of responses to staff personal hygiene requirements

		sum8								Total
		9.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	
No	Count	2	0	0	0	0	0	0	0	2
	% of Total	4.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%
Partially	Count	0	1	1	0	3	0	0	0	5
	% of Total	0.0%	2.1%	2.1%	0.0%	6.2%	0.0%	0.0%	0.0%	10.4%
Yes	Count	0	0	0	5	2	8	9	17	41
	% of Total	0.0%	0.0%	0.0%	10.4%	4.2%	16.7%	18.8%	35.4%	85.4%
Total	Count	2	1	1	5	5	8	9	17	48
	% of Total	4.2%	2.1%	2.1%	10.4%	10.4%	16.7%	18.8%	35.4%	100.0%

Only 35.4% of all restaurants got full scores 18 of 18 points for the section of Staff personal hygiene and their environmental health requirements related to Work clothes are suitable and clean

Table (4.29.b) : Sum of scores of status of responses to staff personal hygiene requirements

		sum8								Total
		9.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	
No	Count	1	0	0	0	0	0	0	0	1
	% of Total	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%
partially	Count	1	1	0	1	0	0	0	0	3
	% of Total	2.1%	2.1%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	6.2%
Yes	Count	0	0	1	4	5	8	9	17	44
	% of Total	0.0%	0.0%	2.1%	8.3%	10.4%	16.7%	18.8%	35.4%	91.7%
Total	Count	2	1	1	5	5	8	9	17	48
	% of Total	4.2%	2.1%	2.1%	10.4%	10.4%	16.7%	18.8%	35.4%	100.0%

Only 35.4% of all restaurants got full scores 18 of 18 points for the section of Staff personal hygiene and their environmental health requirements related to The nails are short and the hands are clean

Table (4.29.c) : Sum of scores of status of responses to staff personal hygiene requirements

		sum8								Total
		9.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	
No	Count	1	0	0	1	0	1	0	0	3
	% of Total	2.1%	0.0%	0.0%	2.1%	0.0%	2.1%	0.0%	0.0%	6.2%
partially	Count	1	0	0	0	0	0	0	0	1
	% of Total	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%
yes	Count	0	1	1	4	5	7	9	17	44
	% of Total	0.0%	2.1%	2.1%	8.3%	10.4%	14.6%	18.8%	35.4%	91.7%
Total	Count	2	1	1	5	5	8	9	17	48
	% of Total	4.2%	2.1%	2.1%	10.4%	10.4%	16.7%	18.8%	35.4%	100.0%

Only 35.4% of all restaurants got full scores 18 of 18 points for the section of Staff personal hygiene and their environmental health requirements related to Respect the ban on employees (jewelry and nail polish).

Table (4.29.d) : Sum of scores of status of responses to staff personal hygiene requirements

		sum8								Total
		9.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	
No	Count	2	1	1	4	4	3	0	0	15
	% of Total	4.2%	2.1%	2.1%	8.3%	8.3%	6.2%	0.0%	0.0%	31.2%
partially	Count	0	0	0	0	1	4	9	0	14
	% of Total	0.0%	0.0%	0.0%	0.0%	2.1%	8.3%	18.8%	0.0%	29.2%
yes	Count	0	0	0	1	0	1	0	17	19
	% of Total	0.0%	0.0%	0.0%	2.1%	0.0%	2.1%	0.0%	35.4%	39.6%
Total	Count	2	1	1	5	5	8	9	17	48
	% of Total	4.2%	2.1%	2.1%	10.4%	10.4%	16.7%	18.8%	35.4%	100.0%

Only 35.4% of all restaurants got full scores 18 of 18 points for the section of Staff personal hygiene and their environmental health requirements related to The hair is completely covered .

Table (4.29.e) : Sum of scores of status of responses to staff personal hygiene requirements

		sum8								Total
		9.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	
partially	Count	1	0	0	0	0	0	0	0	1
	% of Total	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%
yes	Count	1	1	1	5	5	8	9	17	47
	% of Total	2.1%	2.1%	2.1%	10.4%	10.4%	16.7%	18.8%	35.4%	97.9%
Total	Count	2	1	1	5	5	8	9	17	48
	% of Total	4.2%	2.1%	2.1%	10.4%	10.4%	16.7%	18.8%	35.4%	100.0%

Only 35.4% of all restaurants got full scores 18 of 18 points for the section of Staff personal hygiene and their environmental health requirements related to Wash hands properly and when needed .

Table (4.29.f) : Sum of scores of status of responses to staff personal hygiene requirements

		sum8								Total
		9.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	
no	Count	1	1	1	4	0	0	0	0	7
	% of Total	2.1%	2.1%	2.1%	8.3%	0.0%	0.0%	0.0%	0.0%	14.6%
partially	Count	1	0	0	1	3	4	0	0	9
	% of Total	2.1%	0.0%	0.0%	2.1%	6.2%	8.3%	0.0%	0.0%	18.8%
yes	Count	0	0	0	0	2	4	9	17	32
	% of Total	0.0%	0.0%	0.0%	0.0%	4.2%	8.3%	18.8%	35.4%	66.7%
Total	Count	2	1	1	5	5	8	9	17	48
	% of Total	4.2%	2.1%	2.1%	10.4%	10.4%	16.7%	18.8%	35.4%	100.0%

Only 35.4% of all restaurants got full scores 18 of 18 points for the section of Staff personal hygiene and their environmental health requirements related to Use gloves and replace them when needed .

Medical monitoring

Table (4.30.a) : Sum of scores of status of responses to staff Medical monitoring requirements

		sum9			Total
		5.00	7.00	9.00	
No	Count	2	0	0	2
	% of Total	4.2%	0.0%	0.0%	4.2%
Partially	Count	0	2	0	2
	% of Total	0.0%	4.2%	0.0%	4.2%
Yes	Count	0	2	42	44
	% of Total	0.0%	4.2%	87.5%	91.7%
Total	Count	2	4	42	48
	% of Total	4.2%	8.3%	87.5%	100.0%

Only 87.5% of all restaurants got full scores 9 of 9 points for the section of Staff Medical monitoring and their environmental health requirements related to Provides a biomedical clinical check-up for the personnel

Table (4.30.b) : Sum of scores of status of responses to staff Medical monitoring requirements

		sum9			Total
		5.00	7.00	9.00	
No	Count	2	0	0	2
	% of Total	4.2%	0.0%	0.0%	4.2%
Partially	Count	0	2	0	2
	% of Total	0.0%	4.2%	0.0%	4.2%
Yes	Count	0	2	42	44
	% of Total	0.0%	4.2%	87.5%	91.7%
Total	Count	2	4	42	48
	% of Total	4.2%	8.3%	87.5%	100.0%

Only 87.5% of all restaurants got full scores 9 of 9 points for the section of Staff Medical monitoring and their environmental health requirements related to Having valid health certificates

Table (4.30.c) : Sum of scores of status of responses to staff Medical monitoring requirements

		sum9			Total
		5.00	7.00	9.00	
no	Count	0	2	0	2
	% of Total	0.0%	4.2%	0.0%	4.2%
yes	Count	2	2	42	46
	% of Total	4.2%	4.2%	87.5%	95.8%
Total	Count	2	4	42	48
	% of Total	4.2%	8.3%	87.5%	100.0%

Only 87.5% of all restaurants got full scores 9 of 9 points for the section of Staff Medical monitoring and their environmental health requirements related to Full waterproofing for any injury or scratching

Staff Knowledge and training

Table (4.31.a) : Sum of scores of status of responses to staff knowledge and training requirements

			sum10			Total
			2.00	4.00	6.00	
no	Count		30	1	0	31
	% of Total		62.5%	2.1%	0.0%	64.6%
partially	Count		0	8	0	8
	% of Total		0.0%	16.7%	0.0%	16.7%
yes	Count		0	0	9	9
	% of Total		0.0%	0.0%	18.8%	18.8%
Total	Count		30	9	9	48
	% of Total		62.5%	18.8%	18.8%	100.0%

Only 18.8% of all restaurants got full scores 6 of 6 points for the section of Staff Knowledge and training and their environmental health requirements related to Conducting training sessions permanently by specialized persons about good hygiene habits for food workers and about food safety.

Table (4.31.b) : Sum of scores of status of responses to staff Medical monitoring requirements

Documentation of training * sum10 Crosstabulation			sum10			Total
			2.00	4.00	6.00	
no	Count		30	0	0	30
	% of Total		62.5%	0.0%	0.0%	62.5%
partially	Count		0	8	0	8
	% of Total		0.0%	16.7%	0.0%	16.7%
yes	Count		0	1	9	10
	% of Total		0.0%	2.1%	18.8%	20.8%
Total	Count		30	9	9	48
	% of Total		62.5%	18.8%	18.8%	100.0%

Only 18.8% of all restaurants got full scores 6 of 6 points for the section of Staff Knowledge and training and their environmental health requirements related to Documentation of training.

Raw materials receiving and food preparation

Raw materials receiving and storage (Simi manufactured and final products)

Table (32.a): Sum of scores of Receive the products in a clean and separate place from the food preparation areas

		sum11					Total
		21.00	24.00	25.00	26.00	27.00	
partially	Count	1	0	0	0	0	1
	% of Total	2.1%	0.0%	0.0%	0.0%	0.0%	2.1%
Yes	Count	0	1	1	1	44	47
	% of Total	0.0%	2.1%	2.1%	2.1%	91.7%	97.9%
Total	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%

91.7% of all restaurants got full scores 27 of 27 points for the section of Raw materials receiving and food preparation and their environmental health requirements related to Receive the products in a clean and separate place from the food preparation areas.

Table (32.b): Sum of scores The incoming products are subject to control upon receipt and the food is suitable for human consumption and the food is refrigerated and recording temperature of refrigerated, ice and necessary information

		sum11					Total
		21.00	24.00	25.00	26.00	27.00	
Yes	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%
Total	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%

91.7% of all restaurants got full scores 27 of 27 points for the section of Raw materials receiving and food preparation and their environmental health requirements related to The incoming products are subject to control upon receipt and the food is suitable for human consumption and the food is refrigerated and recording temperature of refrigerated, ice and necessary information.

Table (32.c): Sum of scores of enough local storage places

		sum11					Total
		21.00	24.00	25.00	26.00	27.00	
partially	Count	1	0	1	0	0	2
	% of Total	2.1%	0.0%	2.1%	0.0%	0.0%	4.2%
yes	Count	0	1	0	1	44	46
	% of Total	0.0%	2.1%	0.0%	2.1%	91.7%	95.8%
Total	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%

91.7% of all restaurants got full scores 27 of 27 points for the section of Raw materials receiving and food preparation and their environmental health requirements related to There are enough local storage places.

Table (32.d): Sum of scores of Storage in high places on the ground

		sum11					Total
		21.00	24.00	25.00	26.00	27.00	
partially	Count	0	0	1	0	0	1
	% of Total	0.0%	0.0%	2.1%	0.0%	0.0%	2.1%
Yes	Count	1	1	0	1	44	47
	% of Total	2.1%	2.1%	0.0%	2.1%	91.7%	97.9%
Total	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%

91.7% of all restaurants got full scores 27 of 27 points for the section of Raw materials receiving and food preparation and their environmental health requirements related to Storage in high places on the ground.

Table (32.e): Sum of scores of Monitor and record store temperature (temperature below 25 ° C)

		sum11					Total
		21.00	24.00	25.00	26.00	27.00	
yes	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%
Total	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%

91.7% of all restaurants got full scores 27 of 27 points for the section of Raw materials receiving and food preparation and their environmental health requirements related Monitor and record store temperature (temperature below 25 ° C).

Table (32.f): Sum of scores of materials are stored in a stacked and properly labeled warehouse; there is a manufacturing date and expire date on all products

		sum11					Total
		21.00	24.00	25.00	26.00	27.00	
partially	Count	0	1	0	0	0	1
	% of Total	0.0%	2.1%	0.0%	0.0%	0.0%	2.1%
Yes	Count	1	0	1	1	44	47
	% of Total	2.1%	0.0%	2.1%	2.1%	91.7%	97.9%
Total	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%

91.7% of all restaurants got full scores 27 of 27 points for the section of Raw materials receiving and food preparation and their environmental health requirements related The materials are stored in a stacked and properly labeled warehouse; there is a manufacturing date and expire date on all products.

Table (32.g): Sum of scores of Proper stock turnover and lack of expired food (FIFO)

		sum11					Total
		21.00	24.00	25.00	26.00	27.00	
no	Count	1	0	0	0	0	1
	% of Total	2.1%	0.0%	0.0%	0.0%	0.0%	2.1%
yes	Count	0	1	1	1	44	47
	% of Total	0.0%	2.1%	2.1%	2.1%	91.7%	97.9%
Total	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%

91.7% of all restaurants got full scores 27 of 27 points for the section of Raw materials receiving and food preparation and their environmental health requirements related Proper stock turnover and lack of expired food (fifo).

Table (32.h): Sum of scores of Food storage separately (by type)

		sum11					Total
		21.00	24.00	25.00	26.00	27.00	
No	Count	1	0	0	0	0	1
	% of Total	2.1%	0.0%	0.0%	0.0%	0.0%	2.1%
Yes	Count	0	1	1	1	44	47
	% of Total	0.0%	2.1%	2.1%	2.1%	91.7%	97.9%
Total	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%

91.7% of all restaurants got full scores 27 of 27 points for the section of Raw materials receiving and food preparation and their environmental health requirements related Food storage separately (by type).

Table (32.i): Sum of scores of Specific a dedicated and labeled place for expired and unfit products

		sum11					Total
		21.00	24.00	25.00	26.00	27.00	
no	Count	0	1	0	0	0	1
	% of Total	0.0%	2.1%	0.0%	0.0%	0.0%	2.1%
partially	Count	0	0	0	1	0	1
	% of Total	0.0%	0.0%	0.0%	2.1%	0.0%	2.1%
yes	Count	1	0	1	0	44	46
	% of Total	2.1%	0.0%	2.1%	0.0%	91.7%	95.8%
Total	Count	1	1	1	1	44	48
	% of Total	2.1%	2.1%	2.1%	2.1%	91.7%	100.0%

91.7% of all restaurants got full scores 27 of 27 points for the section of Raw materials receiving and food preparation and their environmental health requirements related Specify a dedicated and labeled place for expired and unfit products.

Cross contamination prevention

Table (33.a): Sum of scores of Work in an orderly manner that prevents pollution between departments (no intersections between raw food preparation departments and prepared / ready-made food preparation departments)

		sum13		Total
		26.00	27.00	
yes	Count	1	47	48
	% of Total	2.1%	97.9%	100.0%
Total	Count	1	47	48
	% of Total	2.1%	97.9%	100.0%

97.9% of all restaurants got full scores 27 of 27 points for the section of Cross contamination prevention and their environmental health requirements related Work in an orderly manner that prevents pollution between departments (no intersections between raw food preparation departments and prepared / ready-made food preparation departments) .

Table (33.b): Sum of scores of Cleaning and disinfection of equipment and tools used in raw materials before reuse in finished products (prepared or cooked)

			sum13		Total
			26.00	27.00	
no	Count		0	1	1
	% of Total		0.0%	2.1%	2.1%
yes	Count		1	46	47
	% of Total		2.1%	95.8%	97.9%
Total	Count		1	47	48
	% of Total		2.1%	97.9%	100.0%

97.9% of all restaurants got full scores 27 of 27 points for the section of Cross contamination prevention and their environmental health requirements related to Cleaning and disinfection of equipment and tools used in raw materials before reuse in finished products (prepared or cooked).

Table (33.c): Sum of scores of not re-provide food leftovers

			sum13		Total
			26.00	27.00	
yes	Count		1	46	47
	% of Total		2.1%	97.9%	100.0%
Total	Count		1	46	47
	% of Total		2.1%	97.9%	100.0%

97.9% of all restaurants got full scores 27 of 27 points for the section of Cross contamination prevention and their environmental health requirements related to not re-providing food leftovers.

Table (33.d): Sum of scores of Wash and disinfect vegetables and fruits before use

			sum13		Total
			26.00	27.00	
no	Count		0	2	2
	% of Total		0.0%	4.2%	4.2%
yes	Count		1	45	46
	% of Total		2.1%	93.8%	95.8%
Total	Count		1	47	48
	% of Total		2.1%	97.9%	100.0%

97.9% of all restaurants got full scores 27 of 27 points for the section of Cross contamination prevention and their environmental health requirements related to Wash and disinfect vegetables and fruits before use.

Cleaning and disinfection

Table (34.a): Sum of scores of The existence of a protocol and a mechanism that is clearly presented (eg through a poster) concerning cleaning and disinfection and whether the protocol is followed

		sum14			Total
		9.00	10.00	12.00	
No	Count	0	1	7	8
	% of Total	0.0%	2.1%	14.6%	16.7%
partially	Count	0	0	3	3
	% of Total	0.0%	0.0%	6.2%	6.2%
Yes	Count	1	2	34	37
	% of Total	2.1%	4.2%	70.8%	77.1%
Total	Count	1	3	44	48
	% of Total	2.1%	6.2%	91.7%	100.0%

91.7% of all restaurants got full scores 12 of 12 points for the section of Cleaning and disinfection and their environmental health requirements related to The existence of a protocol and a mechanism that is clearly presented (eg through a poster) concerning cleaning and disinfection and whether the protocol is followed.

Table (34.b): Sum of scores of The presence of cleaning equipment for each area

		sum14			Total
		9.00	10.00	12.00	
no	Count	0	0	2	2
	% of Total	0.0%	0.0%	4.2%	4.2%
partially	Count	0	0	2	2
	% of Total	0.0%	0.0%	4.2%	4.2%
yes	Count	1	3	40	44
	% of Total	2.1%	6.2%	83.3%	91.7%
Total	Count	1	3	44	48
	% of Total	2.1%	6.2%	91.7%	100.0%

91.7% of all restaurants got full scores 12 of 12 points for the section of Cleaning and disinfection and their environmental health requirements related to The presence of cleaning equipment for each area.

Table (34.c): Sum of scores of Chemical cleaning materials are properly labeled and stored away from food places

		sum14			Total
		9.00	10.00	12.00	
no	Count	0	2	0	2
	% of Total	0.0%	4.2%	0.0%	4.2%
partially	Count	0	0	2	2
	% of Total	0.0%	0.0%	4.2%	4.2%
yes	Count	1	1	42	44
	% of Total	2.1%	2.1%	87.5%	91.7%
Total	Count	1	3	44	48
	% of Total	2.1%	6.2%	91.7%	100.0%

91.7% of all restaurants got full scores 12 of 12 points for the section of Cleaning and disinfection and their environmental health requirements related to Chemical cleaning materials are properly labeled and stored away from food places.

Sewage and staff rooms

Table (35.a): Sum of scores of Clean toilets equipped with a usable water pump (Siphon)

		sum15					Total
		5.00	6.00	7.00	8.00	9.00	
No	Count	1	0	0	0	2	3
	% of Total	2.1%	0.0%	0.0%	0.0%	4.2%	6.2%
Partially	Count	0	0	1	0	0	1
	% of Total	0.0%	0.0%	2.1%	0.0%	0.0%	2.1%
Yes	Count	2	1	6	2	33	44
	% of Total	4.2%	2.1%	12.5%	4.2%	68.8%	91.7%
Total	Count	3	1	7	2	35	48
	% of Total	6.2%	2.1%	14.6%	4.2%	72.9%	100.0%

72.9% of all restaurants got full scores 9 of 9 points for the section of Cleaning and disinfection and their environmental health requirements related to Cleaned toilets equipped with a usable water pump (Siphon)

Table (35.b): Sum of scores of The presence of latrines is relatively far from the places where food is prepared

		sum15					Total
		5.00	6.00	7.00	8.00	9.00	
No	Count	1	0	0	0	3	4
	% of Total	2.1%	0.0%	0.0%	0.0%	6.2%	8.3%
partially	Count	1	0	0	0	0	1
	% of Total	2.1%	0.0%	0.0%	0.0%	0.0%	2.1%
Yes	Count	1	1	7	2	32	43
	% of Total	2.1%	2.1%	14.6%	4.2%	66.7%	89.6%
Total	Count	3	1	7	2	35	48
	% of Total	6.2%	2.1%	14.6%	4.2%	72.9%	100.0%

66.7% of all restaurants got full scores 9 of 9 points for the section of Cleaning and disinfection and their environmental health requirements related to The presence of latrines is relatively far from the places where food is prepared.

Table (35.c): Sum of scores of the presence of a notice in the staff's bathroom about the mandatory washing of the hands after using the toilet and the proper washing of the hands

		sum15					Total
		5.00	6.00	7.00	8.00	9.00	
No	Count	2	0	5	0	7	14
	% of Total	4.2%	0.0%	10.4%	0.0%	14.6%	29.2%
partially	Count	1	0	0	0	0	1
	% of Total	2.1%	0.0%	0.0%	0.0%	0.0%	2.1%
Yes	Count	0	1	2	2	28	33
	% of Total	0.0%	2.1%	4.2%	4.2%	58.3%	68.8%
Total	Count	3	1	7	2	35	48
	% of Total	6.2%	2.1%	14.6%	4.2%	72.9%	100.0%

72.9% of all restaurants got full scores 9 of 9 points for the section of Cleaning and disinfection and their environmental health requirements related to availability of a notice in the staff's bathroom about the mandatory washing of the hands after using the toilet and the proper washing of the hands.

Table (35.d): Sum of scores of the presence of a Suitable ventilation in the toilets (window, hood, fan)

		sum15					Total
		5.00	6.00	7.00	8.00	9.00	
No	Count	1	0	0	0	2	3
	% of Total	2.1%	0.0%	0.0%	0.0%	4.2%	6.2%
partially	Count	0	0	0	0	1	1
	% of Total	0.0%	0.0%	0.0%	0.0%	2.1%	2.1%
Yes	Count	2	1	7	2	32	44
	% of Total	4.2%	2.1%	14.6%	4.2%	66.7%	91.7%
Total	Count	3	1	7	2	35	48
	% of Total	6.2%	2.1%	14.6%	4.2%	72.9%	100.0%

72.9% of all restaurants got full scores 9 of 9 points for the section of Cleaning and disinfection and their environmental health requirements related to Suitable ventilation in the toilets (window, hood, fan).

Table (35.e): Sum of scores of the presence of waste containers opened by the feet and covered

		sum15					Total
		5.00	6.00	7.00	8.00	9.00	
No	Count	2	0	1	0	4	7
	% of Total	4.2%	0.0%	2.1%	0.0%	8.3%	14.6%
Yes	Count	1	1	6	2	31	41
	% of Total	2.1%	2.1%	12.5%	4.2%	64.6%	85.4%
Total	Count	3	1	7	2	35	48
	% of Total	6.2%	2.1%	14.6%	4.2%	72.9%	100.0%

72.9% of all restaurants got full scores 9 of 9 points for the section of Cleaning and disinfection and their environmental health requirements related to The presence of waste containers opened by the feet and covered.

Table (35.f): Sum of scores of the presence of Enough lighting in toilets

		sum15					Total
		5.00	6.00	7.00	8.00	9.00	
No	Count	1	0	0	0	4	5
	% of Total	2.1%	0.0%	0.0%	0.0%	8.3%	10.4%
Partially	Count	0	0	1	0	0	1
	% of Total	0.0%	0.0%	2.1%	0.0%	0.0%	2.1%
Yes	Count	2	1	6	2	31	42
	% of Total	4.2%	2.1%	12.5%	4.2%	64.6%	87.5%
Total	Count	3	1	7	2	35	48
	% of Total	6.2%	2.1%	14.6%	4.2%	72.9%	100.0%

72.9% of all restaurants got full scores 9 of 9 points for the section of Cleaning and disinfection and their environmental health requirements related to The presence of Enough lighting in toilets

Table (35.g): Sum of scores of the presence of clean rooms for changing clothes

		sum15					Total
		5.00	6.00	7.00	8.00	9.00	
No	Count	2	0	5	1	7	15
	% of Total	4.3%	0.0%	10.6%	2.1%	14.9%	31.9%
partially	Count	0	0	0	0	1	1
	% of Total	0.0%	0.0%	0.0%	0.0%	2.1%	2.1%
Yes	Count	1	1	2	1	26	31
	% of Total	2.1%	2.1%	4.3%	2.1%	55.3%	66.0%
Total	Count	3	1	7	2	34	47
	% of Total	6.4%	2.1%	14.9%	4.3%	72.3%	100.0%

72.3% of all restaurants got full scores 9 of 9 points for the section of Cleaning and disinfection and their environmental health requirements related to The presence of clean rooms for changing clothes .

Washbasin

Table (36.a): Sum of scores of the presence of sink in toilets equipped with running water, liquid soap, hand-dried paper tissues,

		sum16							Total
		7.00	9.00	15.00	17.00	19.00	20.00	21.00	
No	Count	1	1	0	2	2	0	0	6
	% of Total	2.1%	2.1%	0.0%	4.3%	4.3%	0.0%	0.0%	12.8%
partially	Count	0	0	1	0	0	0	0	1
	% of Total	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	2.1%
Yes	Count	1	0	3	5	4	2	25	40
	% of Total	2.1%	0.0%	6.4%	10.6%	8.5%	4.3%	53.2%	85.1%
Total	Count	2	1	4	7	6	2	25	47
	% of Total	4.3%	2.1%	8.5%	14.9%	12.8%	4.3%	53.2%	100.0%

Only 53.2% of all restaurants got full scores 21 of 21 points for the section of Washbasin and their environmental health requirements related to The presence of sink in toilets equipped with running water, liquid soap, hand-dried paper tissues .

Table (36.b): Sum of scores of the presence of Toilet taps are opened in the elbow (elbow) or foot, or equipped with sensors,

		sum16								Total
		7.00	9.00	15.00	16.00	17.00	19.00	20.00	21.00	
no	Count	1	1	2	0	3	2	1	7	17
	% of Total	2.1%	2.1%	4.2%	0.0%	6.2%	4.2%	2.1%	14.6%	35.4%
yes	Count	1	0	2	1	4	4	1	18	31
	% of Total	2.1%	0.0%	4.2%	2.1%	8.3%	8.3%	2.1%	37.5%	64.6%
Total	Count	2	1	4	1	7	6	2	25	48
	% of Total	4.2%	2.1%	8.3%	2.1%	14.6%	12.5%	4.2%	52.1%	100.0%

Only 52.1% of all restaurants got full scores 21 of 21 points for the section of Washbasin and their environmental health requirements related to Toilet taps are opened in the elbow (elbow) or foot, or equipped with sensors.

Table (36.c): Sum of scores of the presence of Tossing of paper-based sink in the case of faucets for faucets

		sum16								Total
		7.00	9.00	15.00	16.00	17.00	19.00	20.00	21.00	
no	Count	2	0	3	0	5	3	1	17	31
	% of Total	4.2%	0.0%	6.2%	0.0%	10.4%	6.2%	2.1%	35.4%	64.6%
yes	Count	0	1	1	1	2	3	1	8	17
	% of Total	0.0%	2.1%	2.1%	2.1%	4.2%	6.2%	2.1%	16.7%	35.4%
Total	Count	2	1	4	1	7	6	2	25	48
	% of Total	4.2%	2.1%	8.3%	2.1%	14.6%	12.5%	4.2%	52.1%	100.0%

Only 52.1% of all restaurants got full scores 21 of 21 points for the section of Washbasin and their environmental health requirements related to Tossing of paper-based sink in the case of faucets for faucets .

Table (36.d): Sum of scores of the Lack of air hand dryers

		sum16								Total
		7.00	9.00	15.00	16.00	17.00	19.00	20.00	21.00	
no	Count	2	0	2	0	4	5	1	7	21
	% of Total	4.2%	0.0%	4.2%	0.0%	8.3%	10.4%	2.1%	14.6%	43.8%
yes	Count	0	1	2	1	3	1	1	18	27
	% of Total	0.0%	2.1%	4.2%	2.1%	6.2%	2.1%	2.1%	37.5%	56.2%
Total	Count	2	1	4	1	7	6	2	25	48
	% of Total	4.2%	2.1%	8.3%	2.1%	14.6%	12.5%	4.2%	52.1%	100.0%

Only 52.1% of all restaurants got full scores 21 of 21 points for the section of Washbasin and their environmental health requirements related to Lack of air hand dryers.

Food washing techniques

Table (37.a): Sum of scores of the presence of An adequate supply of drinking water is attached to the place where food is washed separate from the laundries

		sum17						Total
		4.00	6.00	8.00	9.00	10.00	12.00	
No	Count	0	0	0	1	0	0	1
	% of Total	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	2.1%
Yes	Count	2	4	19	1	16	5	47
	% of Total	4.2%	8.3%	39.6%	2.1%	33.3%	10.4%	97.9%
Total	Count	2	4	19	2	16	5	48
	% of Total	4.2%	8.3%	39.6%	4.2%	33.3%	10.4%	100.0%

Only 10.4% of all restaurants got full scores 12of 12 points for the section of Food washing techniques and their environmental health requirements related to An adequate supply of drinking water is attached to the place where food is washed separate from the laundries.

Table (37.b): Sum of scores of Cleaners are clean and in good condition

		sum17						Total
		4.00	6.00	8.00	9.00	10.00	12.00	
No	Count	0	0	0	0	1	0	1
	% of Total	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	2.1%
Yes	Count	2	4	19	2	15	5	47
	% of Total	4.2%	8.3%	39.6%	4.2%	31.2%	10.4%	97.9%
Total	Count	2	4	19	2	16	5	48
	% of Total	4.2%	8.3%	39.6%	4.2%	33.3%	10.4%	100.0%

Only 10.4% of all restaurants got full scores 12of 12 points for the section of Food washing techniques and their environmental health requirements related to Cleaners are clean and in good condition.

Drinking water supply and accessibility

Table (38.a): Sum of scores of Water supply connected to drinking water network

		sum18								Total
		11.00	12.00	13.00	15.00	17.00	18.00	19.00	21.00	
no	Count	0	0	0	0	1	0	0	0	1
	% of Total	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	2.1%
partially	Count	0	0	0	0	0	1	0	0	1
	% of Total	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	2.1%
yes	Count	1	1	12	3	19	0	2	8	46
	% of Total	2.1%	2.1%	25.0%	6.2%	39.6%	0.0%	4.2%	16.7%	95.8%
Total	Count	1	1	12	3	20	1	2	8	48
	% of Total	2.1%	2.1%	25.0%	6.2%	41.7%	2.1%	4.2%	16.7%	100.0%

Only 16.7% of all restaurants got full scores 21 of 21 points for the section of Drinking water supply and accessibility and their environmental health requirements related to Water supply connected to drinking water network.

Table (38.b): Sum of scores of The existence of a water tank that is tightly sealed and can be emptied and cleaned periodically

		sum18								Total
		11.00	12.00	13.00	15.00	17.00	18.00	19.00	21.00	
no	Count	0	0	0	0	1	0	0	0	1
	% of Total	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	2.1%
yes	Count	1	1	12	3	19	1	2	8	47
	% of Total	2.1%	2.1%	25.0%	6.2%	39.6%	2.1%	4.2%	16.7%	97.9%
Total	Count	1	1	12	3	20	1	2	8	48
	% of Total	2.1%	2.1%	25.0%	6.2%	41.7%	2.1%	4.2%	16.7%	100.0%

Only 16.7% of all restaurants got full scores 21 of 21 points for the section of Drinking water supply and accessibility and their environmental health requirements related to The existence of a water tank that is tightly sealed and can be emptied and cleaned periodically.

Table (38.c): Sum of scores of The existence of a well (artesian, rainwater harvesting ...)

		sum18								Total
		11.00	12.00	13.00	15.00	17.00	18.00	19.00	21.00	
no	Count	1	1	12	1	13	0	1	0	29
	% of Total	2.1%	2.1%	25.0%	2.1%	27.1%	0.0%	2.1%	0.0%	60.4%
yes	Count	0	0	0	2	7	1	1	8	19
	% of Total	0.0%	0.0%	0.0%	4.2%	14.6%	2.1%	2.1%	16.7%	39.6%
Total	Count	1	1	12	3	20	1	2	8	48
	% of Total	2.1%	2.1%	25.0%	6.2%	41.7%	2.1%	4.2%	16.7%	100.0%

Only 16.7% of all restaurants got full scores 21 of 21 points for the section of Drinking water supply and accessibility and their environmental health requirements related to The existence of a well (artesian, rainwater harvesting ...).

Table (38.d): Sum of scores of The presence of water wells dedicated only for maintenance or watering

		sum18								Total
		11.00	12.00	13.00	15.00	17.00	18.00	19.00	21.00	
no	Count	1	1	12	2	17	1	1	0	35
	% of Total	2.1%	2.1%	25.0%	4.2%	35.4%	2.1%	2.1%	0.0%	72.9%
yes	Count	0	0	0	1	3	0	1	8	13
	% of Total	0.0%	0.0%	0.0%	2.1%	6.2%	0.0%	2.1%	16.7%	27.1%
Total	Count	1	1	12	3	20	1	2	8	48
	% of Total	2.1%	2.1%	25.0%	6.2%	41.7%	2.1%	4.2%	16.7%	100.0%

Only 16.7% of all restaurants got full scores 21 of 21 points for the section of Drinking water supply and accessibility and their environmental health requirements related to The presence of water wells dedicated only for maintenance or watering.

Table (38.e): Sum of scores of Filling of water from a mobile source (tanks) *

		sum18								Total
		11.00	12.00	13.00	15.00	17.00	18.00	19.00	21.00	
No	Count	1	0	0	1	4	0	0	0	6
	% of Total	2.1%	0.0%	0.0%	2.1%	8.3%	0.0%	0.0%	0.0%	12.5%
partially	Count	0	1	0	0	0	0	0	0	1
	% of Total	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%
yes	Count	0	0	12	2	16	1	2	8	41
	% of Total	0.0%	0.0%	25.0%	4.2%	33.3%	2.1%	4.2%	16.7%	85.4%
Total	Count	1	1	12	3	20	1	2	8	48
	% of Total	2.1%	2.1%	25.0%	6.2%	41.7%	2.1%	4.2%	16.7%	100.0%

Only 16.7% of all restaurants got full scores 21 of 21 points for the section of Drinking water supply and accessibility and their environmental health requirements related to Filling of water from a mobile source (tanks).

Table (38.f): Sum of scores of filters for drinking water

		sum18								Total
		11.00	12.00	13.00	15.00	17.00	18.00	19.00	21.00	
no	Count	1	1	12	3	2	0	0	0	19
	% of Total	2.1%	2.1%	25.0%	6.2%	4.2%	0.0%	0.0%	0.0%	39.6%
yes	Count	0	0	0	0	18	1	2	8	29
	% of Total	0.0%	0.0%	0.0%	0.0%	37.5%	2.1%	4.2%	16.7%	60.4%
Total	Count	1	1	12	3	20	1	2	8	48
	% of Total	2.1%	2.1%	25.0%	6.2%	41.7%	2.1%	4.2%	16.7%	100.0%

Only 16.7% of all restaurants got full scores 21 of 21 points for the section of Drinking water supply and accessibility and their environmental health requirements related to There are filters for drinking water.

Table (38.g): Sum of scores of Documented of Periodic maintenance of filters, if any

		sum18								Total
		11.00	12.00	13.00	15.00	17.00	18.00	19.00	21.00	
no	Count	1	1	12	2	2	0	0	0	18
	% of Total	2.1%	2.1%	25.0%	4.2%	4.2%	0.0%	0.0%	0.0%	37.5%
yes	Count	0	0	0	1	18	1	2	8	30
	% of Total	0.0%	0.0%	0.0%	2.1%	37.5%	2.1%	4.2%	16.7%	62.5%
Total	Count	1	1	12	3	20	1	2	8	48
	% of Total	2.1%	2.1%	25.0%	6.2%	41.7%	2.1%	4.2%	16.7%	100.0%

Only 16.7% of all restaurants got full scores 21 of 21 points for the section of Drinking water supply and accessibility and their environmental health requirements related to Documented of Periodic maintenance of filters, if any.

Waste water disposal

Table (39.a): Sum of scores of Wastewater is connected to the local sewage network (municipalities)

		sum19				Total
		6.00	8.00	10.00	12.00	
no	Count	1	0	0	0	1
	% of Total	2.1%	0.0%	0.0%	0.0%	2.1%
yes	Count	2	42	2	1	47
	% of Total	4.2%	87.5%	4.2%	2.1%	97.9%
Total	Count	3	42	2	1	48
	% of Total	6.2%	87.5%	4.2%	2.1%	100.0%

Only 2.1% of all restaurants got full scores 12 of 12 points for the section of Waste water disposal and their environmental health requirements related to Wastewater is connected to the local sewage network (municipalities).

Table (39.b): Sum of scores of Existence of an independent sewage disposal system

		sum19				Total
		6.00	8.00	10.00	12.00	
no	Count	2	1	0	0	3
	% of Total	4.2%	2.1%	0.0%	0.0%	6.2%
yes	Count	1	41	2	1	45
	% of Total	2.1%	85.4%	4.2%	2.1%	93.8%
Total	Count	3	42	2	1	48
	% of Total	6.2%	87.5%	4.2%	2.1%	100.0%

Only 2.1% of all restaurants got full scores 12 of 12 points for the section of Waste water disposal and their environmental health requirements related to Existence of an independent sewage disposal system.

Table (39.c): Sum of scores of A healthy septic

		sum19				Total
		6.00	8.00	10.00	12.00	
No	Count	3	42	0	0	45
	% of Total	6.2%	87.5%	0.0%	0.0%	93.8%
Yes	Count	0	0	2	1	3
	% of Total	0.0%	0.0%	4.2%	2.1%	6.2%
Total	Count	3	42	2	1	48
	% of Total	6.2%	87.5%	4.2%	2.1%	100.0%

Only 2.1% of all restaurants got full scores 12 of 12 points for the section of Waste water disposal and their environmental health requirements related to Existence of A healthy septic

Table (39.d): Sum of scores of septic tank is closed to the well if they exist

		sum19				Total
		6.00	8.00	10.00	12.00	
no	Count	3	41	2	0	46
	% of Total	6.2%	85.4%	4.2%	0.0%	95.8%
yes	Count	0	1	0	1	2
	% of Total	0.0%	2.1%	0.0%	2.1%	4.2%
Total	Count	3	42	2	1	48
	% of Total	6.2%	87.5%	4.2%	2.1%	100.0%

Only 2.1% of all restaurants got full scores 12 of 12 points for the section of Waste water disposal and their environmental health requirements related to Existence of septic tank which is closed to the well if they exist.

Solid waste disposal

Table (40.a): Sum of scores of Use of clean waste containers, equipped with plastic bags that do not leak, open with feet and covered

		sum20		Total
		4.00	6.00	
no	Count	1	0	1
	% of Total	2.1%	0.0%	2.1%
yes	Count	0	47	47
	% of Total	0.0%	97.9%	97.9%
Total	Count	1	47	48
	% of Total	2.1%	97.9%	100.0%

97.9% of all restaurants got full scores 12 of 12 points for the section of Solid waste disposal and their environmental health requirements related to Use of clean waste containers, equipped with plastic bags that do not leak, open with feet and covered.

Table (40.b): Sum of scores of An isolated place to store the waste, with suitable ventilation (window, hood, fan) and is constantly cleaned

		sum20		Total
		4.00	6.00	
	Count	1	47	48
	% of Total	2.1%	97.9%	100.0%
Total	Count	1	47	48
	% of Total	2.1%	97.9%	100.0%

97.9% of all r estaurants got full scores 12 of 12 points for the section of Solid waste disposal and their environmental health requirements related to existence of an isolated place to store the waste, with suitable ventilation (window, hood, fan) and is constantly cleaned.

Pest Control

Table (41.a): Sum of scores of The presence of certificates confirming insecticides and rodents spraying every 3-6 months at least

		sum21							Total
		6.00	7.00	8.00	9.00	10.00	11.00	12.00	
No	Count	7	1	4	0	3	0	0	15
	% of Total	14.6%	2.1%	8.3%	0.0%	6.2%	0.0%	0.0%	31.2%
partially	Count	0	0	0	1	0	2	0	3
	% of Total	0.0%	0.0%	0.0%	2.1%	0.0%	4.2%	0.0%	6.2%
Yes	Count	0	2	5	1	17	2	3	30
	% of Total	0.0%	4.2%	10.4%	2.1%	35.4%	4.2%	6.2%	62.5%
Total	Count	7	3	9	2	20	4	3	48
	% of Total	14.6%	6.2%	18.8%	4.2%	41.7%	8.3%	6.2%	100.0%

Only 6.2% of all restaurants got full scores 12 of 12 points for the section of Pest Control and their environmental health requirements related to the presence of certificates confirming insecticides and rodents spraying every 3-6 months at least.

Table (41.b): Sum of scores of Vector / insect control operations are carried out by a licensed private company, under the supervision of the food establishment or others

		sum21							Total
		6.00	7.00	8.00	9.00	10.00	11.00	12.00	
No	Count	5	1	4	1	1	0	0	12
	% of Total	10.4%	2.1%	8.3%	2.1%	2.1%	0.0%	0.0%	25.0%
Yes	Count	2	2	5	1	19	4	3	36
	% of Total	4.2%	4.2%	10.4%	2.1%	39.6%	8.3%	6.2%	75.0%
Total	Count	7	3	9	2	20	4	3	48
	% of Total	14.6%	6.2%	18.8%	4.2%	41.7%	8.3%	6.2%	100.0%

Only 6.2% of all restaurants got full scores 12 of 12 points for the section of Pest Control and their environmental health requirements related to Vector / insect control operations are carried out by a licensed private company, under the supervision of the food establishment or others.

Table (41.c): Sum of scores of No insects or signs of presence in food preparation and storage

		sum21							Total
		6.00	7.00	8.00	9.00	10.00	11.00	12.00	
No	Count	2	0	2	0	1	0	0	5
	% of Total	4.3%	0.0%	4.3%	0.0%	2.2%	0.0%	0.0%	10.9%
partially	Count	0	0	0	0	1	0	0	1
	% of Total	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	2.2%
Yes	Count	5	1	7	2	18	4	3	40
	% of Total	10.9%	2.2%	15.2%	4.3%	39.1%	8.7%	6.5%	87.0%
Total	Count	7	1	9	2	20	4	3	46
	% of Total	15.2%	2.2%	19.6%	4.3%	43.5%	8.7%	6.5%	100.0%

Only 6.5% of all restaurants got full scores 12 of 12 points for the section of Pest Control and their environmental health requirements related to no insects or signs of presence in food preparation and storage.

Table (41.d): Sum of scores of Use of flying insect capture devices in appropriate places

		sum21							Total
		6.00	7.00	8.00	9.00	10.00	11.00	12.00	
No	Count	7	2	8	1	14	0	0	32
	% of Total	14.6%	4.2%	16.7%	2.1%	29.2%	0.0%	0.0%	66.7%
partially	Count	0	1	0	1	1	2	0	5
	% of Total	0.0%	2.1%	0.0%	2.1%	2.1%	4.2%	0.0%	10.4%
Yes	Count	0	0	1	0	5	2	3	11
	% of Total	0.0%	0.0%	2.1%	0.0%	10.4%	4.2%	6.2%	22.9%
Total	Count	7	3	9	2	20	4	3	48
	% of Total	14.6%	6.2%	18.8%	4.2%	41.7%	8.3%	6.2%	100.0%

Only 6.2% of all restaurants got full scores 12 of 12 points for the section of Pest Control and their environmental health requirements related to use of flying insect capture devices in .

4.3. Discussion of results

Here , the results obtained will be discussed and compared with some previous studies.

In analyzing the results, we noticed that there were different ratios, some of which were high and achieved the required conditions at an excellent rate, others were between good and bad.

Here are the results :

4.3.1. License

All studied restaurants have a valid license which issued by the Environmental health department at the Public Health Directorate in the governorate in coordination with municipalities and local councils. The license is granted to restaurants for one year, which is renewed annually based on laws and regulations related to infrastructure, employees, environmental conditions, and equipment.

Our results were in contradict with findings of the study conducted by Al-khatib (2009), who found that only 33.2% of restaurants were licensed in Ramallah and al-Beereh. But in this period we think this picture is different due to enforcement of the monitoring bodies including the ministry of Health.

4.3.2. Food preparation places (ground, walls and ceilings, equipment and utensils, doors and windows, ventilation, lighting, dining room staff).

Our results related to above topics were in most items among excellent rate, ranged from (91.7% to 97.9%), but in some items including ventilations among good rate (77.1%) and for the staff dining room which was among poor level (46.8%). In addition, these findings were in accordance with Al-Khatib, 2009.

4.3.3. Staff and food perpetrators in terms of personal hygiene (suitable work clothes, clean short nails, clean hands, respect for staff bans (jewelry and nail polish) , hair cover, hand wash properly and, when needed, use gloves and replace them when needed), and training .

4.3.3.1 Personal hygiene of workers:

Only 35.4% of all restaurants got full grades 18 of 18 points for personal hygiene requested by and environmental health department, Ministry of Health (MOH).

We found that the proportion of participants who are committed to personal hygiene (uniform, aprons, hats and shoes covered by the appropriate; wearing jewelry that can contaminate foods during work) is in contradict with the study conducted by Sani and Siow, 2014 who studied the Knowledge, attitudes and practices of food handlers on food safety in food service operations at the University Kebangsaan Malaysia, and found that 46.6% of food handlers were committed to personal hygiene.

In addition, our results were in accordance to a study conducted by Al-Nasraween et al., (2018). It was found that the results obtained related to hand washing for workers where the percentage of committed 37%.

4.3.3.2. Medical Supervision

A total of 87.5% of all restaurants had medical certificates of disease free and this result is due to the requirements of restaurants license.

4.3.3.3 Training and Information:

The findings show that the training of the staff was poor among most of studied restaurants (18.8% of all restaurants received a full score of 6 out of 6 points for the "Staff knowledge, training and environmental health requirements for permanent training sessions by professionals on good hygiene habits for food workers and food safety, and 18.8% for training documentation).

These findings were better results of Nasraween et al., (2018), who found that only 10% of workers trained in food. And less than a study of Al-Khatib, 2009, who found that 37,6% of restaurant workers reported receiving such training on personal hygiene and food safety.

4.3. 4. Receive and prepare food

4.3. 4.1. Receiving and storing raw materials, (semi and final products):

Ninety-two percent of restaurants were committed to receive and store raw materials in a special and suitable place. According to their answers to questionnaire, the raw materials are received in a clean and separate place out of the food preparation areas after inspected make it suitable for human consumption. In addition, the stored material is packed, and labeled properly. These findings are in contradict with those of Al-Khatib, 2009 who found that only 18.3% of restaurants keep and store raw materials correctly. It negatively affects the quality of food that is stored randomly and sometimes presents it with pollution.

Also, refer to a study Al-Nasraween et al., (2018), the percentage of correct responses with regard to optimal food storage was 54%. This is a small percentage compared with the results of our study.

4.3. 4.2. Freezing and cooling facilities:

Our findings shown that about 99.6% of studied restaurants were committed to regulations and instructions related to the required standards requested by the monitoring bodies including ministry of health.

These findings were better that found in studies of (Sani Siow, 2014, and Al-Nasraween et al., (2018)), who found a poor knowledge and practices related to suitable temperature for freezing and cooling food among Malaysian and Jordanian restaurants workers which were 68.9% and 50.0% respectively.

4.3.4.5. Prevention of cross contamination

A total of 98.0% of all restaurants received full scores 27 out of 27 points for cross contamination prevention (i.e., there was a separation between raw food preparation and ready to eat food).

4.3.5. Cleaning and disinfection

A total of 91.7% of studied restaurants conducted cleaning and disinfection based on oral cleaning and disinfection protocol by restaurant owners. Also, this result was in contradict with Al-Khatib, 2009 who found that there was not systematic cleaning and about 75,4% of the restaurants keeping disinfectants and detergents away from the places of food preparation, and this result close to the results of our study.

4.3.6. Sanitary facilities and changing rooms

4.3.6.1. Bathrooms and changing rooms:

For toilets, the percentage of restaurants committed was 72.9% in terms of clean latrines and equipped with a usable water pump (Siphon), as well as for ventilation and lighting, and the presence of covered waste containers opened by the feet.

Latrines found away from the food preparation site in about 66.7% of the studied restaurants and some of restaurants have no latrines due to kind of meals they offered (i.e., sandwiches and take a away meals).

However, in the study of Al-Khatib, 2009 found that the proportion of restaurants containing latrines was 78.2% and 7.47% of restaurants lack of a suitable ventilation due to poor infrastructure planning.

4.3.6.2 Washbasins:

The percentage of restaurants committed was 53.2% in terms of clean and well-equipped toilets, equipped with running water, liquid soap, paper towels for drying hands, and garbage containers opened with feet and covered.

4.3.6.3 Washing machines:

The percentage was very small for restaurants by 10.1% where there was sufficient supply of drinking water attached to the place of washing the food separate from the laundries and dishwashers clean and in good condition. This result could be due to development in plastic industries, which make almost all of restaurants' equipment as disposable equipment.

4.7 Basic sanitation

4.3.7. 1 Water supply:

Water supply for all restaurants was the municipal network and some of them using water from wells but these wells are shared with others staying in the same building (i.e., most restaurants are located within a rent commercial buildings including other kinds of trading activities). Despite this condition, 16.7% were achieved all water supply standards.

4.3. 7.2Waste water Solid waste disposal:

Most of restaurants 97.7% are connected with the municipal sewerage system and disposing solid wastes through the municipal system due to efficient waste system existed in Hebron Municipality.

4.3.8 Vector / insect control:

The serious problem which was found in most of studied restaurants was the insect and pest control (i.e., only 6.1% of them had a mechanism to treat it). But through our observation and conservations with the owners we found that the last activity by the ministry of health making them to looking for solution for this problem and some of them had solved it through local pest control companies.

4.4. Conclusion and Recommendations

4.4.1. Conclusions:

First of all, this study was conducted after that recent and last actions took by the ministry of Health which lead to close some uncommitted restaurants in Hebron city. In this study we tried to construct a classification checklist that can be served as an evaluation form for restaurants and places for preparation and deliver foods to people that can be used by different monitoring authorized bodies mainly the ministry of health. In addition to this checklist we evaluated the studied restaurants and investigate to what extent these restaurants followed and committed to health and environmental conditions related to different items that can describe the situation. Levels of commitment were varied among studied restaurants but in general it was found that the main core of health conditions requirements was adopted by majority of restaurants which gives an indication that continuous inspection and monitoring is resulting in this positive results.

Time consuming that took to complete all restaurants in Hebron city and refusal of some owners of restaurants to be enrolled in this study were the main limitation of this study but to overcome of this limitation we tried to include different kinds and levels of restaurants in order to generalize our results.

The results of this study indicate that there is a shortage of some items in the checklist. However, it was stated that the goal is food safety. Attention was drawn to the lack of personal hygiene of the workers, and there were some malpractices during work .

4.4.2. Recommendations:

4.4.2.1 Recommendations restaurant owners

4.4.2.1.1 Design of the building and its surroundings

- Engineering design should be taken in consideration that can allows for different apartments for different use (kitchen, store, employee place....etc)
- The ground, walls and ceilings should be coated with a kind of paint that prevents moisture, makes it easy to clean, and prevent of contamination.
- The floor should be designed taking in consideration the sewer water, so that the rinse water is easily carried out to the drainage networks and prevents any pooling of water inside restaurant area .
- Windows must be protected by a netting or sieve that prevents the entry of insects and animals.
- Bathrooms and waste collection sites should be away from food preparation areas and bathrooms are not open directly to food preparation areas.
- Swabs should be used in bathrooms to prevent unpleasant odors from reaching food preparation areas.
- The outdoor environment of the restaurant should be free from dust, grass, waste with good lighting. Also should be away from source of contamination.

4.4.2.1.2 Equipment, devices and surfaces

- Refrigerators and freezers must be a good source to ensure adequate storage temperatures for food safety :
 - Refrigerator temperature is 4 degrees and below .
 - Freezer temperature of -11 degrees and below .

- Cutting boards, equipment and knives should not be made of wood, but of reinforced plastic, and from a reliable source that guarantees its quality and non-contamination of food, the cutting surfaces should be of different colors :
 - Red: Meat.
 - Yellow: Chicken.
 - Green: Vegetables.
 - White: For slicing bread and dough.
- All grinding machines, rollers, surfaces and equipment should be stainless steel.

4.4.2.1.3 Reception and storage of foods

- Provide adequate and clean space for storage of raw materials.
- Be away from any source of moisture, and contamination
- Store foods on shelves elevated from the ground.
- Availability of pest control mechanism.

4.4.2.1.4 Staff hygiene

- Wear a special and clean uniform.
- Wear head cover during work.
- Gloves should be used after washing and disinfecting the hands, and should be changed continuously after each new job.
- All worker should be disease free and hold accredited certification approved this, and any infected employee should be prevented from practicing his work until he fully recovers.
- If a worker is injured, he must be isolated until he is treated.
- Trim nails and cut hair
- A room should be provided for workers to eat and change clothes.

- It is strictly forbidden to smoke, eat and drink in places of preparation
- Workers' clothing should be in private rooms and not distributed in food preparation areas.
- It is recommended that restaurant owners conduct training sessions for restaurant workers on a regular basis by specialists on good hygiene habits, food workers and food safety.

4.4.2.1.5 Cleaning equipment, appliances and building

- Maintaining the continuous cleanliness of the restaurant, especially food preparation area during working hours.
- Clean and disinfect the ground, walls and ceilings when finished work.
- Cleaning and disinfecting drainage networks.
- Sterilization of machinery, equipment and equipment after washing and cleaning with hot water.
- Special clothes must be worn for cleaning workers.
- Surfaces should be cleaned and sterilized after each use.
- Refrigerators and freezers should always be kept clean from the inside and free from leftover food.
- All equipment and cleaning materials should be kept in special places and away from food preparation areas.
- Special insecticides should be kept outside the restaurant in private rooms.

4.4.2.2 Recommendations to the Authorized inspection bodies

- A written action guideline should be available for the restaurants owners to follow it from the beginning on which the license can be offered.
- Continuous inspection and monitoring as a routine work and not only as a reflection work.
- Coordination should be among different monitor and inspection bodies including ministry of health, ministry of economy, municipalities, ...etc to avoid contradiction and mistakes.
- Announcing the names and places of uncommitted restaurants.
- Educational programs to restaurants and employees should be conducted continuously and whenever needed.

4.5 References

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4.6. Appendixes

4.6.1 Appendix 1 Palestinian Legislative Council Public Health Law

Chapter Four

Food Safety

Article Sixteen

The Ministry demands the following from the factory or the importer of foodstuff, within a period he specifies:

1. Its chemical composition and structure.
2. Details about how they are used and exchanged.
3. A sample of these products for analysis and examination.
4. Any other information pertaining to public health.

Article Seventeen

The Ministry, in coordination with the competent bodies, shall be responsible for the inspection of food during the exchange process, in addition to inspecting the:

1. imported food at arrival to customs and not allowing its entrance until the Ministry approves
2. locally produced foods, in their places manufacturing or preparation.

Article Eighteen

It is forbidden to deal with foods if:

1. They were in violation with the specified standards and specifications.
2. They were hampered with in a manner that changes their nature.
3. They were not appropriate for human consumption, or hazardous to human health

Article Nineteen

Foods shall be deemed inappropriate for human consumption in the following cases:

1. If there was a change in its structure or natural characteristics with respect to taste or smell or shape.

2. If the analysis proved that there was a change in the chemical structure or any forbidden chemical additions that created food contamination by any chemical, biological or radial means.
3. If its expiry date stated on it, has elapsed.
4. If they were transported in unhealthy conditions or methods.

Article Twenty

Foods are harmful to human health in the following conditions:

1. If they were contaminated with radioactive materials or microbes or fungi or pesticides in a manner that would lead illnesses in humans
2. If they were produced from an animal infected by an illness transferable to humans or from a dead animal.
3. If their packaging or containers contain materials harmful to health.
4. If they contained hazardous chemical materials or heavy metals in excess to what is allowed that would cause diseases for human beings.

Article Twenty one

There should be a commitment towards the specifications and conditions determined in the obligatory technical instructions issued by the standards institute in coordination with the Ministry.

Article Twenty Two

It is forbidden neither to deal with special foods nor to advertise them before their registration and the attainment of a permit from the Ministry to deal and to market them.

Article Twenty Three

1. The importer shall bear the costs of sample analysis when its entering the country.
2. The food factory shall bear the costs of sample analysis that is taken during the manufacturing process

Article Twenty Four

It is not permissible to license any individual infected with any infectious disease, to work as a food or beverage vendor.

Article Twenty Five

1. The specialized staff assigned by the Ministry have the right to examine the food samples during the exchange process
2. the samples mentioned in the previous article shall be taken according to the special instructions that are issued according to the law.

Article Twenty Six

The samples shall be analyzed and examined in laboratories determined by the Ministry. The concerned person shall be informed about the results within a period not exceeding fifteen days from the date the sample was taken.

Article Twenty Seven

If, according to the apparent examination or sample analysis, it was guaranteed that the sample does not have the specifications and characteristics required, harmful to human's health, inappropriate for human consumption or cheated, the Ministry will take the needed actions in cooperation with the competent bodies, to destroy the foodstuff from which the sample was taken from on the cost of the responsible.

Article Twenty Eight

For all those who deal with foodstuff, they should provide the specialized employee assigned by the Ministry with all the information and samples he/she needs in order for him/her to complete their mission in accordance with the law.

Article Twenty Nine

It's not permissible that the employee assigned for inspection in a certain area to be related directly or indirectly to any foodstuff business.

Article Thirty

It is forbidden to hide or deal with any foodstuff seized according to law by any means possible

٢.٦.٤ نموذج التفتيش على سلامة الأغذية

نموذج تفتيش حول سلامة الغذاء

معلومات عامة :

اسم المؤسسة : اسم المالك :

نوع المؤسسة : مطعم سناك سوپرماركت مخبز مصنع حلويات

مصنع البان واجبان ملحمة مسلخ غيره حدد:

العنوان : رقم الهاتف:

القضاء: المحافظة : رقم الترخيص:

التاريخ : الوقت :

اسم المراقب الصحي : رقم الهاتف :

نوع الزيارة : تفتيش روتيني تسمم غذائي شكوى غير محدد:

اولاً-أماكن تحضير الطعام :

١. الأرض :

ملاحظات	لا	جزئياً	نعم	نقاط التفتيش
				مغطاة بمواد عازلة سهلة التنظيف ومانعة للانزلاق
				ذات اسطح ملساء، خالية من التشققات
				مجهز بمصفاة لمياه الصرف

			مغطاة بمواد عازلة ، سهلة التنظيف وذات لون فاتح
			ذات اسطح لمساء ، خالية من التشققات
			أسقف أو أسقف مستعارة نظيفة وبحالة جيدة

٢. الجدران والاسقف:

٣. المعدات والأواني:

			مصنوعة من أسطح لمساء ، نظيفة/سهلة التنظيف
			استعمال معدات وأواني غير قابلة للصدأ ولا تحتوي على مادة الميلايمين
			استعمال معدات وأواني مصنوعة من الستانلس ستيل
			وجود ألواح تقطيع مختلفة بحسب اختلاف الأطعمة
			وجود مسافة كافية بين المعدات لمنع التلوث وتسهيل عملية التنظيف

٤. الابواب والنوافذ :

			نظيفة وبحالة جيدة
			مقفلة دائما او مجهزة بشباك فعالة لمكافحة الحشرات

٥. التهوية :

			جميع الأقسام خالية من الروائح والبخار
			المراوح ، أجهزة التهوية وشفت الهواء نظيفة وفعالة

٦. الإضاءة:

			توفر الإضاءة الطبيعية او الاصطناعية بشكل وافٍ
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٧. غرفة طعام الموظفين:

			وجود غرفة طعام للموظفين نظيفة وبحالة جيدة
			وجود: مغسلة، ماء ساخن ، صابون ومحارم لتجفيف اليدين

ثانيا- الموظفون ومجهزو الطعام :

١. النظافة الشخصية:

				ملايس العمل مناسبة ونظيفة
				الاطافر قصيرة واليدين نظيفتان
				احترام الحظر المفروض على الموظفين (المجوهرات وطلاء الاظافر)
				الشعر مغطى كليا
				غسل اليدين بطريقة صحيحة وعند الحاجة
				استعمال القفازات وتبديلها عند الحاجة

٢. المراقبة الطبية:

				توفر معاينة طبية سريرية نصف سنوية للعاملين
				وجود شهادات صحية صالحة التاريخ
				تغطية تامة مقاومة للماء لاي جرح او خدش لدى العاملين

٣. التدريب والمعلومات:

				تنفيذ دورات تدريبية بشكل دائم من قبل اشخاص متخصصين حول العادات الصحية الجيدة للعاملين بالاغذية وحول سلامة الغذاء
				وجود توثيق للتدريبات

ثالثاً- استلام وتحضير الطعام:

١. استلام وتخزين المواد الأولية المنتجات شبه المصنعة والمنتجات النهائية:

ملاحظات	لا	جزئيا	نعم	نقاط التفقيش
				استلام المنتجات في مكان نظيف ومنفصل عن أماكن تحضير الطعام
				المنتجات الواردة تخضع لمراقبة عند استلامها والمواد الغذائية صالحة للاستهلاك البشري ويتم معاينة وتسجيل حرارة الطعام المبرد والمثلج والمعلومات الضرورية
				هناك ما يكفي من أماكن التخزين المحلي
				التخزين في أماكن مرتفعة عن الأرض
				مراقبة وتسجيل حرارة المخزن (حرارة اقل من ٢٥ درجة مئوية)

				المواد المخزنة معبأة ومعنونة بشكل سليم في المخازن ؛ وجود تاريخ التصنيع وتاريخ الانتهاء على جميع المنتجات
				دوران المخزون بشكل مناسب وعدم وجود مواد غذائية منتهية الصلاحية (Adequate stock rotation, First In First Out)
				تخزين المواد الغذائية بشكل منفصل (حسب النوع)
				تحديد مكان مخصص ومعنون للمنتجات المتلفة والمنتية الصلاحية

٢. مرافق التجميد والتبريد :

ملاحظات	لا	جزئياً	نعم	نقاط التفقيش
				المرافق نظيفة وبحالة جيدة
				جميع البرادات والثلاجات (فريزر) مزودة بأجهزة قياس للحرارة تعمل بصورة صحيحة
				تتم مراقبة وتسجيل حرارة البرادات والثلاجات يوميا (يجب ان تكون حرارة البراد اقل من خمس درجات مئوية والثلاجة اقل من - ١٨ درجة مئوية)
				الأطعمة مخزنة على رفوف معدنية مقاومة للصدأ
				الأطعمة النيئة منفصلة عن الأطعمة المطبوخة والجاهزة للتقديم (تخزين الطعام المطبوخ والجاهز للتقديم على الرفوف العليا ، والطعام النيء والبيض على الرفوف السفلى)
				تغطية الأطعمة بشكل مناسب
				استخدام صناديق بلاستيكية لتخزين الخضار والفاكهة
				المواد المخزنة معنونة بشكل سليم في البرادات والثلاجات، وجود تاريخ الصنع وتاريخ الانتهاء على جميع المنتجات
				عدم وجود مواد غذائية منتهية الصلاحية

٣. الوقاية من التلوث ما بين المواد المختلفة :

				سير العمل بطريقة منظمة تمنع التلوث بين الأقسام (عدم وجود تقاطع بين أقسام تحضير الطعام النيء وأقسام تحضير الطعام المطبوخ/الجاهز للتقديم)
				تنظيف وتطهير المعدات والأدوات المستعملة في المواد الأولية قبل إعادة استخدامها في المنتجات النهائية (المعدة أو المطبوخة)

				عدم إعادة تقديم بقايا الطعام
				غسل وتطهير الخضار والفاكهة قبل الاستعمال

رابعاً- التنظيف والتطهير :

ملاحظات	لا	جزئياً	نعم	نقاط التفتيش
				وجود بروتوكول وألية معروضة بوضوح (عبر ملصق مثلاً)يتعلق بالتنظيف والتطهير وهل يتم اتباع البروتوكول
				وجود معدات تنظيف خاصة بكل منطقة
				مواد التنظيف الكيميائية معنونة بشكل صحيح ومخزنة بعيداً عن أماكن الطعام

خامساً- أماكن المرافق الصحية وغرف تبديل الملابس :

١. دورات المياه وغرف تبديل الملابس :

ملاحظات	لا	جزئياً	نعم	نقاط التفتيش
				وجود مراحيض نظيفة مجهزة بمضخة للماء صالحة للاستعمال (سيفون)
				وجود مراحيض بعيدة نسبياً عن أماكن تحضير الطعام
				وجود إشعار في حمام الموظفين حول إلزامية غسل اليدين بعد استعمال المراض وطريقة غسل اليدين الصحيحة
				وجود تهوية مناسبة في المراحيض(نافذة، شفاط، مروحة)
				وجود مستويات نفايات تفتح بالقدم ومغطاة
				وجود إنارة كافية في المراحيض
				وجود غرف نظيفة مخصصة لتبديل الملابس

٢. المغاسل :

				وجود مغاسل في دورات المياه مجهزة بالمياه الجارية ، الصابون السائل ، محارم ورقية لتجفيف الأيدي ، ومستوعبات للنفايات تفتح بالقدم وغطاة
				وجود حنفيات مغاسل تفتح بالمرفق(الكوع) أو بالقدم ، أو مجهزة ب SENSOR
				تسكير حنفيات المغاسل بالمحارم الورقية في حال وجود مسكات للحنفيات
				عدم وجود مجففات الأيدي القاذفة للهواء

٣. أجهزة غسل الأطعمة :

				وجود إمدادات كافية من مياه الشرب موصولة بمكان غسل الأطعمة منفصلة عن المغاسل
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				أجهزة غسل الأطعمة نظيفة وفي حالة جيدة
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سادساً- المرافق الصحية الأساسية :

١. إمدادات مياه الشرب :

ملاحظات	لا	جزئياً	نعم	نقاط التفتيش
				إمدادات المياه متصلة بشبكة مياه الشرب
				وجود خزان للمياه محكم الإغلاق يمكن إفراغه وتنظيفه دورياً
				وجود بئر (ارتوازي ، تجميع مياه الأمطار ...)
				وجود مياه آبار مخصصة فقط للصيانة أو للسقي
				تعبئة مياه من مصدر نقال (صهاريج)
				وجود فلتر
				صيانة دورية موثقة للفلاتر في حال وجودها

٢. التخلص من المياه المبتذلة :

				متصلة بشبكة الصرف الصحي المحلية (البلديات)
				وجود نظام مستقل للتخلص من مياه المجاري
				وجود حفرة صحية
				قرب الحفرة الصحية من البئر في حال وجودهما

٣. التخلص من النفايات الصلبة :

				استخدام مستوعبات نفايات نظيفة، مجهزة بأكياس بلاستيكية لا ترشح ، تفتح بالقدم ومغطاة
				وجود مكان معزول لتخزين النفايات ، ذي تهوية مناسبة(نافذة، شفاط، مروحة) ويتم تنظيفه باستمرار

4. مكافحة النواقل/ الحشرات (Vector / Pest Control):

				وجود شهادات تؤكد رش مبيدات للحشرات والقوارض كل ٣-٦ أشهر على الأقل
				عمليات مكافحة النواقل/ الحشرات منقذة من قبل شركة خاصة مرخصة، تحت إشراف المؤسسة الغذائية أو غيرها
				عدم وجود حشرات أو إشارات تدل على وجودها في أماكن تحضير وتخزين الطعام
				استعمال أجهزة النقاط الحشرات الطائرة في الأماكن المناسبة

امضاء المراقب الصحي :

