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YEDİTEPE UNIVERSITY INSTITUTE OF HEALTH SCIENCES
DEPARTMENT OF NUTRITION AND DIETETICS

**EVALUATION OF THE STAFF WORKING IN THE
KITCHEN OF THE CORPORATION THAT
PROVIDES COLLECTIVE NUTRITION SERVICE
IN ISTANBUL IN TERMS OF HYGIENE AND
SANITATION**

MASTER THESIS

AYŞEGÜL YAĞIZ

İstanbul, 2021

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SUPERVISOR

Asst. Prof. Dr. Üyesi Hülya Demir

İstanbul, 2021

APPROVAL

THESIS APPROVAL FORM

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APPROVAL

This thesis has been deemed by the jury in accordance with the relevant articles of Yeditepe University Graduate Education and Examinations Regulation and has been approved by Administrative Board of Institute with decision dated and numbered

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DECLARATION

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree except where due acknowledgment has been made in the text.

Date

Signature

Name Surname



DEDICATION

That this thesis is my own work, that all the students in the selection are planned and obtained within academic and ethical rules, all the information and comments that are not obtained through the thesis study are selected for all the information and comments, and the choices for these sources are in line with a behavior style towards patents and good children on the thesis and writing.

Date

Signature

Name Surname



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Dietitian Ayşegül Yağız

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LIST OF SYMBOLS AND ABBREVIATIONS

Mass Nutrition: (MN)

Mass Nutrition Service: (MNS)

Organizations Provided Mass Nutrition: (OPMS)

Mass Nutrition Systems: (MNS)

First In First Out: (FIFO)

Good Food Practices: (GFP)

Turkish Standards Institute: (TSI)

International Standards Organization: (ISO)

ABSTRACT

Ayşegül, Y. (2021). Evaluation of the Staff Working in the Kitchen of the Institution Providing Mass Nutrition Service in İstanbul in terms of Hygiene and Sanitation. Yeditepe University Institute of Health Sciences, Department of Nutrition, Master Thesis, Istanbul.

This thesis study was carried out in order to train educators and staff in the institutions that provide Collective Nutrition Education (TBH) in İstanbul. The study consists of people registered with 134 personnel (headchef, cooker, assistantcooker, waiter, caterer, warehouseman, cashier and management staff) working in October 2020, March 2021. The work consists of mixed staff in the hospital kitchen, factory, plaza team. A total of 134 people were included in the study. Of the personnel participating in the study, %47 are women and %53 are men. The search was carried out in a single phase. Socio-demographic characteristics of the personnel working in the catering kitchen (age, marital status, gender, educational status), their duties in the kitchen (headchef, cooker, assistantcooker, waiter, dishwasher, warehouseman, cashier and management team), working hours in the Office and in the institution, in service A questionnaire consisting of 37 questions and 3 sub-heading (food, personnel and kitchen equipment hygiene). Hygiene perception scale was applied in order to determine the education status, who received the training, disease status, material used to provide hygiene and hygiene levels. The results of this study were evaluated with the 5- point Likert method. Respondents were scored based on their answers to questions about hygiene. It is expected that he/she will get 14-70 points from the food hygiene department, 10-50 points from the kitchen equipment hygiene section, 13-65 points from the personnel hygiene section, 37-185 points in total. The participants in the questionnaire received an average of $55,98 \pm 5,18$ points from the food hygiene department, $36,99 \pm 3,50$ points from the kitchen equipment hygiene. The scores of married individuals in the “Food Hygiene” sub-dimension of the Hygiene Perception Scale were found to be statistically significantly higher than those of single subjects ($p=0.026$; $p<0.05$). A statistically significant difference was found between the scores of the personnel in the “Food Hygiene” sub-dimension of the Hygiene Perception Scale according to their education level ($p=0.049$; $p<0.05$). The scores of the subjects with high school education in the scale sub-dimension were found to be significantly lower than those with a university

education level ($p=0.039$; $p<0.05$). A statistically significant difference was found between the scores of the individuals on the Hygiene Perception Scale total according to their education level ($p=0.019$; $p<0.05$). The scores of the subjects with high school education in the scale sub-dimension were found to be significantly lower than those with a university education level ($p=0.019$; $p<0.05$). The scores of subjects who received in-service training in the Hygiene Perception Scale “Hygiene of Tools in the Kitchen” sub-dimension were found to be statistically significantly higher than those who did not receive training ($p=0.009$; $p<0.01$). The scores of the subjects who received training from a food hygiene instructor in the Hygiene Perception Scale “Hygiene of Tools in the Kitchen” sub-dimension were found to be statistically significantly higher than those who received training from other educators ($p=0.014$; $p<0.05$).

Keywords: Collective Nutrition Service, Hygiene Perception Scale, Food Hygiene, Kitchen Equipment Hygiene, Personnel Hygiene

ÖZET

Ayşegül, Y. (2021). İstanbul’ da Toplu Beslenme Hizmeti Veren Kurum Mutfağında Çalışan Personelin Hijyen ve Sanitasyon Açısından Değerlendirilmesi. Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü, Beslenme ve Diyetetik Bölümü, Yüksek Lisans Tezi, İstanbul.

Bu tez çalışması İstanbul’ da Toplu Beslenme Hizmeti (TBH) veren kurum mutfağında çalışan personelin hijyen ve sanitasyon açısından değerlendirilmesi amacıyla yapılmıştır. Çalışma Ekim 2020 tarihleri Mart 2021 tarihleri arasında İstanbul’ da bulunan catering firmasının İstanbul sınırları içerisinde ki projelerinde çalışan toplam 134 personel (aşçıbaşı, aşçı, aşçı yardımcısı, garson, bulaşıkçı, depocu, kasiyer ve yönetim ekibi) hijyen bilgi düzeylerinin ölçülmesi amacıyla yürütülmüştür. Çalışma hastane mutfağında, fabrika mutfağında, plaza mutfağında çalışan karma personellerden oluşmaktadır. Çalışmaya toplam 134 kişi dahil edilmiştir. Çalışmaya katılan personellerin %47’ sini kadınlar, %53’ ünü erkekler oluşturmaktadır. Araştırma tek aşamalı olarak yürütülmüştür. Catering mutfağında çalışan personellerin sosyo-demografik özellikleri (yaş, medeni durum, cinsiyet, eğitim durumu), mutfaktaki görevleri (aşçıbaşı, aşçı, aşçı yardımcısı, garson, bulaşıkçı, depocu, kasiyer ve yönetim ekibi), görevde ve kurumda çalışma süreleri, hizmet içi eğitim alma durumları, eğitimi kimlerden aldığı, hastalık durumu, hijyeni sağlamaya yönelik kullanılan malzemeler ve hijyen düzeylerini saptamak amacıyla 37 soruluk 3 alt başlıklı (besin, personel ve mutfak araç gereç hijyeni) Hijyen Algı ölçeğinden oluşan anket uygulanmıştır. Bu çalışmanın sonuçları 5’li likert yöntemiyle değerlendirilmiştir. Ankete katılanlar hijyen ile ilgili sorulara verdikleri yanıtlar üzerinden puanlandırma yapılmıştır. Besin hijyeni bölümünden 14-70, mutfak araç gereç hijyeni bölümünden 10-50, personel hijyeni bölümünden 13-65 puan toplamda 37-185 puan almış olması beklenmektedir. Ankete katılanlar besin hijyeni bölümünden ortalama $55,98 \pm 5,18$, mutfak araç-gereç hijyeni bölümünden $36,99 \pm 3,50$, personel hijyeni bölümünden $45,74 \pm 4,73$ puan almış olup ölçek toplamından ortalama $147,31 \pm 11,42$ puan aldığı saptanmıştır. Evli bireylerin Hijyen Algı Ölçeği “Besin Hijyeni” alt boyutundan aldıkları puanlar, bekar olgulara göre istatistiksel olarak anlamlı düzeyde yüksek saptanmıştır ($p=0,026$; $p<0,05$). Eğitim durumuna göre personellerin Hijyen Algı Ölçeği “Besin Hijyeni” alt boyutundan aldıkları puanlar arasında istatistiksel olarak anlamlı farklılık saptanmıştır ($p=0,049$;

$p<0,05$). Eğitim durumu lise olan olguların ölçek alt boyutundan aldıkları puanlar, eğitim durumu üniversite olanlara göre anlamlı düzeyde düşük saptanmıştır ($p=0,039$; $p<0,05$). Eğitim durumuna göre bireylerin Hijyen Algı Ölçeği toplamından aldıkları puanlar arasında istatistiksel olarak anlamlı farklılık saptanmıştır ($p=0,019$; $p<0,05$). Eğitim durumu lise olan olguların ölçek alt boyutundan aldıkları puanlar, eğitim durumu üniversite olanlara göre anlamlı düzeyde düşük saptanmıştır ($p=0,019$; $p<0,05$). Hizmet içi eğitim alan olguların Hijyen Algı Ölçeği “Mutfaktaki Araç Gereç Hijyeni” alt boyutundan aldıkları puanlar, eğitim almayanlara göre istatistiksel olarak anlamlı düzeyde yüksek saptanmıştır ($p=0,009$; $p<0,01$). Besin hijyen eğitmeninden eğitim alan olguların Hijyen Algı Ölçeği “Mutfaktaki Araç Gereç Hijyeni” alt boyutundan aldıkları puanlar, diğer eğitimcilerden eğitim alanlara göre istatistiksel olarak anlamlı düzeyde yüksek saptanmıştır ($p=0,014$; $p<0,05$).

Anahtar kelimeler: Toplu Beslenme Hizmeti, Hijyen Algı Ölçeği, Besin Hijyeni, Mutfak Araç-Gereç Hijyeni, Personel Hijyeni

1. INTRODUCTION

1.1. Corporate Approach and Scope

Derived from “Hygieinos”, the transition to Hygiene is also designed to be for health. This is the future in terms of health and environment, to design transportation and our environment as clean for a healthy life. It is used in conjunction with sanitation in English. Sanitas is the Latin origin of 'health and possible development. Hygiene and sanitation are fundamentally essential to the food industry and are described as "to be taken for protection and proper handling". In other words, care and sanitation in welfare facilities cannot be provided for the safe food available, but also appropriately (1) (2) (3)

Mass Nutrition Service (MNS) is expected to be planned from one side of the nutrition of the general mass by the institutions and organizations providing this service. The purpose of the Organizations Provided Mass Nutrition: (OPMN) is to carry healthy nutrition from the time until the food is served. It is necessary to review and plan the necessary controls and the points that need to be checked at all stages until the required service. The improper preparation of foods, that is, the lack of hygiene and sanitation, can be caused by nutrients and food routes (4).

Hygiene and sanitation is the most commonly reported basic information. Hand hygiene, surface hygiene, equipment hygiene, etc. provide assistance in obtaining. The fog of diseases consists of 20% revitalizing with nutrients. Having the personal hygiene and sanitation used for feeding this collective purpose and having the equipment carries the must-have foods and the large size to be grown like the deaths (5).

2. GENERAL INFORMATION

2.1. Definition, Classification and Importance of Mass Nutrition Systems

MA Nutrition is the consumption of food determined, planned and prepared by institutions outside the homes of individuals by others. Organizations that provide this service to individuals are also called "Organizations Provided Mass Nutrition (OPMN), "Mass Nutrition Service (MNS)" or "Mass Nutrition Systems (MNS)" (6).

MA; It includes processes such as planning the menus, purchasing, storing, preparing and making ready for service, and disposal of the wastes, as well as the management of the personnel who carry out this process, the correct use and maintenance of kitchen tools (7). MNS is also a set of services that include the management, planning, organization and preparation of a group's nutritional needs by a center (5).

MNS, which has been applied since ancient times, has developed in parallel with the development of the industry and has become an important part of human life today. More than half of the population of countries with developing and growing industries, and about one-tenth of Turkey's population, meet their food needs from OPMN. As the population and work intensity increase, the number of people who meet their food needs from OPMN will also increase. MNS; It is of great importance because of the fact that it is a service that can be accessed by individuals from all segments of the society, that it meets 2/5 or half of the daily nutritional requirement, and because of the public health problems that may be caused by inappropriate and low-quality service (8).

Today, consumers are from OPMNs; they want the foods consumed to be in a way that provides a balanced diet, to provide quality and affordable service that will not adversely affect health (9).

The culinary management in MN giving organizations includes many tiered systems. Therefore, MNS is a set of systems in which necessary controls must be made at every stage. Although it may seem like the only food that comes out of the process, there are many critical steps in the emergence of the product. Problems that may occur during MN stages may cause food poisoning that threatens public health, as well as negativities that may result in death (6).

Studies report significant increases in foodborne poisonings worldwide. It shows that these increases can seriously threaten public health (10). Although the sum of the biological, physical and chemical properties of food is important in terms of quality, it is the most sought-after quality feature for it to be safe in terms of public health. Protection of public health and prevention of food-borne diseases are the most important points in MN giving institutions (11).

The establishment (12) where mass feeding is done is classified as 2 groups (Commercial/Non-Commercial) in Table-1.

Table 1: Classification of Institutions with Mass Nutrition

1. <u>Group 1: Organizations That Provide Commercial Bulk Nutrition</u>
• - Restaurants (Hotels, motels, fast food, entertainment and resting places in markets, etc.) -Food factories, • - Buffets
2. <u>Group: Non-Commercial Bulk Nutrition Organizations</u>
A. Organizations that provide mass catering for industrial workplaces - Public organizations -Various business lines
B. Organizations that provide institutionalized mass nutrition - Organizations belonging to the private sector -Education-related organizations
• • -Health related organizations • • -Organizations belonging to the armed forces • • -Nursing home-Home for the weak • • -Day care homes and crèches • • -Prisons -Reforms

Source: (12)

2.2. Importance of Hygiene and Sanitation in Mass Nutrition Systems

Hygiene means the protection and development of health in medicine. In other words, it expresses health itself. For the OPMN kitchen; It means the protection of consumer health by preventing microorganism contamination in the stages from purchasing the food to its preparation, storage and cooking and making it ready for service (13).

The word sanitation is used synonymously with hygiene. It means health and cleanliness in medicine (4). More broadly; It means compliance with the cleaning and health rules required for the removal of microorganisms from the environment (14).

The problems encountered in OPMN, which does not take adequate measures in terms of hygiene and sanitation, are given below (5).

- Customer dissatisfaction and loss
- Loss of yield and decrease in sales.
- Legal action and penalty to the MN issuing institution.
- Loss of motivation in the staff working in the kitchens of places with MN.
- Damage to the image of the MNS and loss of trust.
- Re-informing the kitchen staff working in the place that causes MN about hygiene and sanitation with in-service trainings.

Foods, which are accepted as the main ingredient of life, can become harmful and hidden danger for our health due to insufficient hygiene in the stages from purchase to final product (15). Human is an important factor in ensuring that foods do not become dangerous and harmful. Personnel working in the food industry must fulfill

their responsibilities in a way that does not put public health at risk. As a large amount of food is produced, the thawing, preparation, cooking, cooling, storage and heating times of foods are different from each other. It is important for the food industry to provide business hygiene in order to fulfill the quality standards. Producing food that does not pose a risk to human health and is not deformed by microorganisms, and ensuring hygiene and sanitation is as important as the taste of the food (16).

In MNS, it is extremely important to protect consumer health, to produce and serve foods that will not harm public health, and to prevent diseases caused by food poisoning. Due to the comprehensive nature of MNS, if hygiene rules are not taken into account, it may cause negative results in terms of public health (17). Viruses, bacteria, molds and parasites, which can be transmitted to the foods we consume in many different ways, can negatively affect our health.

In summary; The most important indicator of hygiene in OPMN kitchens is the reliability of the food to be served (18). Reliable food means; It is expressed as the fact that the foods used in the kitchen by the manufacturer are far from physical, biological and chemical factors and dangers that may arise from food and that they are not risky in terms of health. (5)

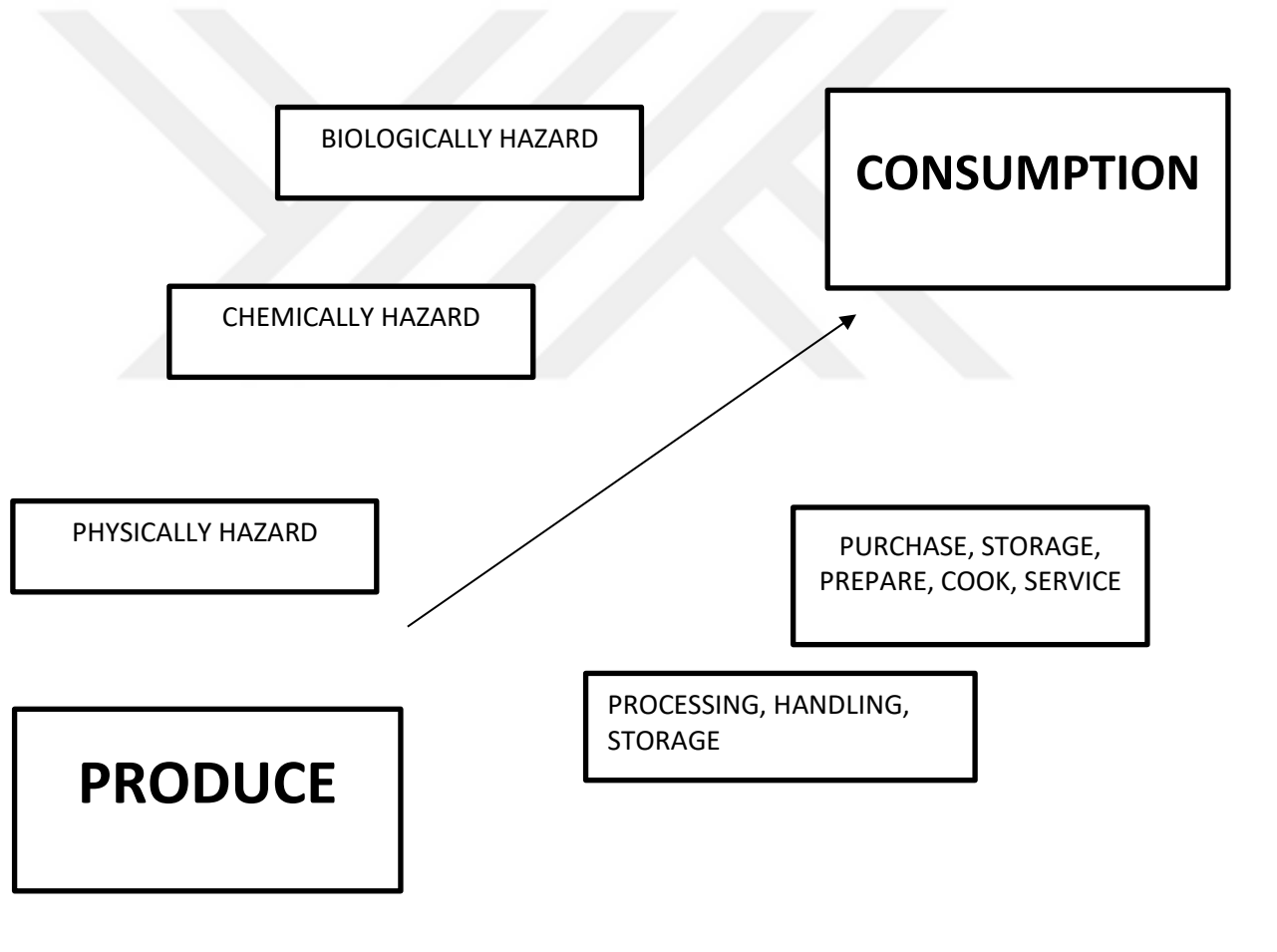
The personnel working in OPMN are required to provide adequate sanitation and hygiene, from their personal hygiene to the hygiene of the tools used in the kitchen. In the absence of hygiene and sanitation, it will be impossible to reach and consume safe food, and it may be possible to encounter situations that negatively affect public health, such as food poisoning. In OPMN, HACCP and HACCP-based ISO 22000: 2005 Food safety management systems are applied to ensure food safety. Thanks to these systems, risk points that may occur in this area are determined and taken under control. (5)

2.3. Hazard in Food Safety

The risks caused by food are divided into 3 different groups as physical, chemical and biological hazards by evaluating the stages such as purchasing, storage, preparation, cooking and serving separately from the production stage to consumption.

The risks related to food are shown in Table-2 (19).

Table 1: Hazard in food safety



Source: (12)

2.3.1. Physical Hazard

Physical hazards include all of the hazards that arise during the service of non-food items from production to consumption, resulting from contamination from equipment, environmental factors, packaging and food from working personnel. Carelessness can occur as a result of ignoring one of the stages in quality management systems and negligence. These dangers are; Insects are foreign materials such as metal pieces, stone, glass pieces, jewelry, pieces of paper and cardboard, rings and jewelry, and animal hair (20).

2.3.2. Chemical Hazard

Chemical hazards are one of the most important causes of foodborne illness and even death. Chemical hazards in foods; It includes natural toxins such as mycotoxin, environmental metals (such as mercury, cadmium, dioxin), veterinary and pesticide residues, natural chemicals found in plants and food additives (21).

The most dangerous and harmful of born food toxins; aflatoxins, which are formed as a result of improper storage of legumes and nuts; and toxins such as solanine, which arise as a result of improper storage of vegetables such as potatoes. Harmful metals can mix with foods after the thawing process from equipment-tools-equipment where foods are stored, preserved or kept, and even as a result of storing or keeping acidic foods in non-tinned containers, dangerous metals can dissolve and transfer to foods. Agricultural pesticides used to increase efficiency while producing vegetables and fruits contaminate food as a result of unconscious and misuse. Especially after these foods are purchased or harvested, they need to be washed very well. Detergents mixed with foods, used above the recommended dosages or passing through poorly washed containers cause foods to become harmful to health. The use of chemicals added to give color to foods, to increase their durability, smell and taste, is a risk to health (22).

Chemical substances can be transmitted during the production, transportation and storage of food. Toxic chemicals can pass through from the environment, from the equipment in which the food is transported. (20)

2.3.3. Biological Hazard

When it comes to biological hazards, bacteria, parasites, viruses, molds, prions and algae are mainly discussed.

If the hygiene and sanitation rules are not followed at all stages from the preparation of the food to the service, every food produced poses a risk for the consumer. There are two main reasons for food poisoning:

- 1) Contact of food with bacteria
- 2) The pathogens have multiplied in an amount that will cause poisoning and for this, the appropriate temperature and other conditions in the environment are suitable for the bacteria. (9)

Sources of contamination of microorganisms;

- Raw foods used in food production
- Surfaces of production areas and kitchen/outdoor equipment
- Sources of cross contamination
- Materials used in cleaning (such as a cleaning cloth)
- Weather
- Soil
- That

- People
- Animals
- Garbage

Factors that cause the development of microorganisms in foods are grouped under 4 groups:

- 1) Factors that depend on the nature of the food (such as water activity, food pH, nutrient content)
- 2) Factors related to the processes applied to foods (such as freezing, drying, heat treatment)
- 3) Environmental factors (such as temperature, relative humidity, light, gas concentration)
- 4) The presence of oxygen also affects microbiological activities positively or negatively (23).

There are 2 factors that cause biohazard in foods.

- 1) Naturally occurring toxins
- 2) Microorganisms (24).

2.3.3.1. Naturally Created Toxins

Environmental factors, the structure of the soil where the food is grown, the toxins naturally found in foods and inadequate storage conditions can cause negative effects on human health (24).

For example: *Amanita phalloides* and *Amanita muscaria* contain Atropine as a toxic substance. *Soianum Dulcarnara* (wild jasmine) is called poison blackberry and its

toxic substance is "solaine". Phaseolus Vulgaris (raw kidney beans) also contains toxic substances that cause serious poisoning. (25)

2.3.3.2. Microorganism

Microorganisms that are effective in spoilage of food are as follows;

1) Bacteria

2) Mayas

3) Molds

4) Viruses (25)

2.3.3.2.1. Bacteria

Bacteria multiply in foods and cause deterioration in their taste and appearance. These can be positive and negative. Sometimes food can be completely spoiled and thrown away. The color of the food that has reached this stage may have changed, the surface liquids may have become slippery or the clear appearance in the liquids of the food may have left its place to a blurry appearance. These results are caused by the breakdown of macronutrients in foods. Bacteria use macronutrients in food so they can provide energy and reproduce. As a result, chemicals such as alcohol, organic acids and gas may be released and cause the food to change in terms of flavor, color, odour, texture and consistency. (15)

Bacteria can survive if the appropriate environment is provided. If light, oxygen and humidity conditions are provided and there is enough food in the environment, bacteria can reproduce. If these conditions are met, 1 million bacteria can grow in 15 hours. Bacteria can survive between 7 and 63 °C. If this temperature is exceeded, the bacteria die. However, at temperatures below 7 °C, they continue to live while their

vital functions stop. The temperature at which they can reproduce the fastest is 37 °C.
(26)

2.3.3.2.2. Mayas

Yeasts and fungi can be both beneficial and harmful to foods. Yeasts with their unique cell structure can be of different shapes and sizes. Compared to bacteria, yeasts have larger cells and are single-celled. cream, red, pink etc. They can form different color pigments such as They divide by budding. Since the Mayas cannot live on their own, they live as parasites on plants and animals. Yeasts need less moisture. Again, when compared to bacteria, the temperature at which they reproduce best is 25-30 °C. They need an acidic environment for their reproduction. (15).

Brettanomyces, Candida, Hansenula, Rodotorula, Micoderma and Sackaromyces are important yeasts (25).

2.3.3.2.3. Molds

Molds are microorganisms that play an important role in the formation of fermented foods (bread, beer, sausage, yogurt, wine, etc.). Molds can cause some disorders such as porous structure formation, bad odor, taste and gas formation in foods. They reproduce by forming cottony appearance and colorful colonies on foods. For this reason, food spoils and becomes inedible. Molds such as bacteria are used in the preparation of some foods. Molds appear threadlike and are multicellular. These filamentous structures are called hyphae, and the structures formed by the hyphae are called mycelium. There are spore sacs at the ends of the hyphae, and thanks to this feature, they can contaminate food. They can reproduce even at -5°C and -10°C. Negative conditions such as damage to pesticides, tissue damage, over-ripening and bark cracks in the production phase of herbal products prepare the environment for the

growth of molds. 10 min at 60 °C. heating kills most spores, but their toxins are heat resistant and not easily destroyed. Mold growth is stopped at low temperatures, but mold growth may occur again at suitable temperatures.

Aspergillus, Penicillium, Fusarium, Alternaria are examples of molds (15).

2.3.3.2.4. Viruses

Viruses are the smallest microorganisms that live as parasites. They need living things to reproduce and develop. They cannot develop and reproduce outside the cells of living organisms such as animals, humans, bacteria and plants (27). Viruses are defined as the smallest of microorganisms and the simplest in terms of their characteristics. Like parasites, they need other hosts to reproduce. Viruses cannot reproduce even if they are in direct contact with food, but they are carried through food. Fish caught from dirty waters can also cause the transport of these microorganisms (15). Rotaviruses, Hepatitis A virus, parvoviruses, Norwalk and Norwalk-like viruses, enteric adenoviruses, polioviruses, caliciviruses, echoviruses, astroviruses can enter the body as a result of the consumption of the contaminated food by living organisms and cause diseases (28).

2.4. Ways of Ensuring in Mass Nutrition System

In order to provide hygiene and sanitation in OPMN, food hygiene, personnel hygiene, physical conditions and equipment hygiene are provided (29).

2.4.1. Food Hygiene

In MNS, food hygiene can be provided by complying with the necessary hygiene rules at all stages from purchasing to the service stage (29).

2.4.1.1. Purchase

Increasing population and environmental pollution, decreased education level, economic inequalities create nutritional problems and make it difficult to reach safe food. (15) The main purpose of OPMN is to provide reliable food supply. (30)

Points to consider when purchasing foods;

- When supplying nutrients, they should be received from reliable sources.
- Food and beverages that are not sure to be reliable should not be purchased.
- Open milk should not be purchased.
- Cracked, deformed and dirty eggs should not be purchased.
- High-risk foods such as meat, chicken, fish, milk, etc. It should not be received below 5 ° C and the received products should be kept at appropriate temperatures and warehouses.
- When the food is brought to OPMN, it must be delivered properly and must be unopened, well-packaged and packaged, clean and safe.
- Foods from OPMN should not be crushed, rotten or spoiled.
- Seasonal vegetables and fruits should be purchased.
- When purchasing canned products, those with dished tops, crushed or damaged lids should not be purchased.
- While purchasing dried legumes, cereals, flour and derivatives, care was taken to accept goods that are not moldy, infested, or have broken grains.

- Risky foods (such as meat, chicken, fish, milk, etc.) should not come into contact with other foods. These should be considered when purchasing.

- Frozen foods should not be received at temperatures below -18 ° C and should be kept at appropriate temperatures and warehouses.

- The foods purchased should be according to the technical specifications prepared by OPMN, and the quality criteria for foods should be included in the specification. In case of any inconvenience, food should not be purchased.

2.4.1.2. Storage

The next stage after the purchasing stage is the storage stage of nutrients. The purpose of proper storage is to prevent food records that may occur with this method and to eliminate the negative effects that may occur in terms of human health. Proper storage is provided by placing the foods according to the number, type and current capacity of the warehouses, paying attention to the warehouse temperatures, preventing the contact of the processed or dry foods with the ground, and storing them 6 cm above the floor. (31)

Storage is very important for human health. Especially for young children whose immune system is not as developed as adults, it is much more important to store foods at appropriate temperatures and conditions (32).

Points to be considered during storage;

- Foods that need to be stored in cold storage should be stored in refrigerators after they are purchased and received.

- Food should be left at room temperature for a maximum of 2 hours.

- The temperatures of the warehouses should be checked frequently. Refrigerators should be between 0-+4° C and freezers should be at -18° C or lower. The instructions on the labels of the products should be followed and stored in appropriate warehouses. Products that have not been properly stored should not be used.

- Foods should be stored in warehouses with their mouths closed.

- Moldy foods in warehouses should be destroyed immediately.

- Care should be taken to clean the warehouses, and frequent cleaning should be done in case of spills and leaks.

- Care should be taken not to open the doors of cold rooms and deep freezers in case of power cut.

In Table-3 below, the temperatures and times that some foods should be preserved are given (5).

Table 2: Temperatures and Times at which Some Foods Need to be Preserved

Name of Nutrition	Temperature ° C	Time
Meat, Chicken	0-2	3-5 day
Fish	-1,0	1-2 day
Mince	0-2	1-2 day
Egg	4-7	7 day
Pasteurized Milk	3-4	1 day
Hard Covered Fruit	4-7	14 day
Soft Covered Fruit	4-7	2 day
Green Leaf Vegetable	4-7	5 day
Other Vegetable	4-7	14 day

Onion, Patato	15-20	14-21 day
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Source: (5)

2.4.1.2.1. Dry Storage

Food can be stored safely in hygienic dry warehouses. These;

- Canned goods (such as tomato paste, pickles, etc.)
- Oils (such as olive oil, sunflower oil, etc.)
- Packaged spices (such as black pepper, chili pepper, cumin, salt, etc.)
- Salt and sugar
- Cereals and derivatives (such as rice, bulgur, all kinds of flour, pasta, etc.)
- Dried legumes (such as chickpeas, lentils, kidney beans, etc.)
- Pastry materials (cream, whipped cream, cocoa, drop-drop, etc.)
- Some vegetables (such as onions, potatoes, garlic, etc.)

Dry warehouses should be clean and tidy. The good functioning of the ventilation systems prevents the reproduction of microorganisms such as mold and bacteria. Temperature and humidity levels should be checked frequently.

The main points to be considered in dry warehouses are as follows;

1. For long-term shelf life; Dry foods should be stored at an average of 10 ° C. For most foods stored in dry storage, this temperature is between 15-21°C.

2. In these warehouses, there must be a temperature thermometer and a humidity meter on the walls. The humidity percentage of the warehouses should be 60% on average (33).

The cleaning of dry warehouses should be planned and done on a daily basis. Surface cleaners with disinfectant additives should be used for floor cleaning. Cleaning planning should be done for walls and shelves in 15-day periods and disinfection process should be carried out (8). Food should be stored on plastic or metal pallets. Opened foods should be labeled and stored together with food bags. Food should be stored on pallets or pallets away from walls and at least 15 cm from the floor. In this way, cleaning becomes easier and food is kept away from pests (33).

Food should never come into contact with the ground. Newly purchased food should be stored on the first-in, first-out (FIFO) principle. In this way, the use of foods whose expiration date is approaching is ensured. Opened or unpacked products must be labeled. It should be classified according to its characteristics and referred to as a warehouse (34).

In order to ensure pest control and to prevent cross contamination, no crumbs, garbage and similar residues should be left in the dry warehouse and should be cleaned immediately (33). Cleaning materials should not be placed in storage areas and should be taken to the cleaning and chemical warehouse after cleaning.

2.4.1.2.2. Cold Storage

The temperatures of these warehouses should be 4° C and below. At these temperatures, fresh meat, poultry such as chicken, turkey, fish, seafood, milk and dairy products, fresh vegetables and fruits can be stored. In addition, processed foods can be stored in these warehouses. Shelf life of perishable foods is extended by cold storage. A

food is safe if it is kept in a cold environment. Because bacteria cannot reproduce in a cold environment. (33)

The storage times of some foods in cold storage are shown in Table-4.

Table 3: Storage Periods of Some Foods in Cold Storage

Nutrient	Temperature^o C	Time
Meat	0-2	3-5
Mince	0-2	1-2
Fish	-1-0	1-2
Egg	4-7	7
Soft Covered Fruit	4-7	2
Hard Covered Fruit	4-7	14
Green Vegetable	4-7	5
Other Vegetable	4-7	14

Source: (8)

Stacking shelves in cold stores should be perforated. Thanks to its perforated airflow, it can reach the food.

Points to consider when storing foods in cold stores;

- Excess storage prevents airflow. Therefore, storage should be done according to capacity.
- Hot foods should not be stored in cold stores.
- Clean, hygienic and convenient plastic crates should be used in the vegetable and fruit warehouse. Wooden crates cannot be used for storage in these warehouses.

- Milk and delicatessen products due to their odor-retaining properties; should not be stored in the same warehouses as onions and seafood.
- In order to prevent cross contamination; Raw and cooked foods should be stored in separate warehouses.
- Raw poultry, fish and red meat should be stored in separate warehouses. Its juices should not come into contact with other foods.
- Raw products and cooked products should be stored in separate warehouses with a stretch on them.
- During material placement, the thermometers of the warehouses should be closed and the lids should not be kept open for a long time (33), (8).

2.4.1.2.3. Deep Cooling

Deep cooling means storing food between -3° C-0° C. In this way, the amount of bacterial growth in the environment is reduced. Thanks to this storage, the shelf life of seafood, red and white meats and other protein foods is extended (35).

2.4.1.2.4. Deep Freeze

In the deep freezer; red and white meats, seafood, fruits and vegetables, ice creams can be stored fresh and safely at -18° C. Foods that are received frozen can also be stored in their own packaging.

The storage times of some foods in deep freezers are shown in Table-5. (35).

Table 4: Storage Periods of Some Foods in Deep Freezers

Nutrient	Max Storage Time (-17,7/-23,3°C)
Large Piece of Meat	6 Month

Mince, Cubed Meat	3-4 Month
Poultry	6 Month
Fish	3-6 Month
Shellfish	3-4 Month
Vegetable and fruit juice	8-12 Month
Cooked and Half Cooked Food	2-6 Month

Source: (Esmer, 2001)

Freezing food inhibits their growth, but does not kill bacteria. If food is not thawed correctly after freezing, contacted bacteria will begin to multiply rapidly. Therefore, 3 points should be considered in the defrosting process of foods.

- Thawing in coolers below 4 ° C.
- Dissolving with clean water below 21° C.
- Microwave thawing.

Thawed foods should not be refrozen (35) (8) (33).

2.4.1.3. Prepared/Cooked/Storage

Personnel working in OPMN should pay attention to their personal hygiene because of the possibility of transmitting microorganisms and other harmful agents that cause food poisoning to food. From the preparation of the food to the service stage, food poisoning can be seen as microorganism contamination may occur from the food to the workers (9). In cases where proper preparation, cooking and storage processes are not performed, loss of nutritional value and loss of consistency, color and quality may occur.

Points to be considered during preparation, cooking and storage; (9)

- Raw and cooked foods should not be stored in the same environment. It is necessary to use different materials and equipment during its preparation and processing.
- Different counters should be used in the preparation of potentially risky foods such as meat, fish, chicken.
- According to the preparation, the personnel who take it should pay particular attention to their personal hygiene.
- Potentially risky foods such as meat, fish, chicken should be stored at 4° C or below.
- Vegetables and fruits must be rinsed with plenty of water and cleaned.
- Hygiene of all equipment used in the preparation of food must be ensured.
- Foods that are ready for consumption should be consumed within 2 hours. It is imperative that they be covered during the period until the service.
- Hot meals should be kept in hot bain-marie units and care should be taken that their internal temperature is 60° C and above. Care should be taken to keep cold dishes in cold stores and to keep their internal temperatures between 3-5 °C.
- Frozen meals should be thawed at room temperatures and should not be frozen again.
- The dishes to be re-cooled should be placed in deep shallow tubs and cooled at 20 ° C.
- The internal temperatures of the food to be cooled should be measured again with the help of a probe-thermometer.
- Attention should be paid to the cleanliness of the bathtubs.

- Cooled meals should be stored in warehouses according to the first-in, first-out principle (FIFO).
- The dishes that are ready to be served should be tasted.

2.4.1.4. Service

Service; It means presenting the food and beverages that have been prepared, cooked and ready for consumption to the consumer (15). Food and beverage to be served should be presented to the consumer in the best quality and food safety should be ensured (37). If ready-to-eat meals are not to be consumed immediately, they should be kept covered and their internal temperature should be 60 degrees. Pre-cooling process is required for meals that will not be consumed during the day. It should be subjected to this process for 2-3 hours in cold or iced tubs in shallow containers (38).

2.4.1.5. Collection Waste and Reduces

Waste left over from consumers is called garbage. In OPMN, a large amount of garbage can be generated during the preparation of vegetables, the stripping and washing of dishes and the preparation of meals. Places where microorganisms and rodents are concentrated are generally places where there is a lot of garbage. Therefore; garbage and food should not be in the same environment and should not be in contact with the tools and equipment in the environment where food will be prepared. If care is not taken, public health will be endangered as a result of microorganisms transmitted from pests and rodents or due to bacteria reproducing on the surface of the garbage. In order to prevent environmental pollution and to meet quality standards, garbage must be collected and disposed of properly (39).

2.4.1.6. Kitchen and Equipment Hygiene

As a result of insufficient cleaning of kitchen tools and surfaces in the kitchen, there may be contamination of microorganisms with food. Cleaning processes should be divided into two as the cleaning of tools and kitchen work areas. Those that are in direct contact with food and carry high risk, and those that do not have direct contact with food, such as walls, shelves and similar surfaces, can be examined as low risk. In order to minimize the risk for those in high-risk areas, hot water, detergent and disinfectant should be used for cleaning, while the use of hot water and detergent will be sufficient for cleaning low-risk areas (40).

2.4.1.7. Personnel Hygiene

Hygiene; While it is defined as providing sanitation and protecting public health, personnel hygiene is defined as the personal hygiene of the personnel working in OPMN. The hygiene of the personnel working in OPMN is of great importance in terms of food safety. Personnel working in these institutions are the main source of pathogens and cause microorganisms such as viruses and bacteria to pass into food and cause diseases (20).

While the knowledge, attitudes and behaviors of the personnel working in OPMN on hygiene and sanitation affect consumer satisfaction, they also greatly affect the success of the institution. The fact that the personnel carry disease factors, not being subjected to porter examination, not paying attention to the cleanliness of their hands, mouth and work clothes can be a risk for human health by transmitting pathogens through food. In a study conducted in the United States, inadequate personnel hygiene can cause disease at a rate of 31%. (41).

Points to be considered by the staff; hands, body surface and uniforms.

2.4.1.7.1 Hands

We are exposed to pollutants of the external environment throughout our lives. At this point, hygiene and sanitation are important for us to stay away from infections. (42). Microorganisms found all over our body are mostly found in our hands. From the moment we come to the world, microorganisms play an important role both in creating our flora and strengthening our immune system. This process takes 20-30 seconds. must be maintained throughout. It should be 60-90 seconds for total hand washing. (43)

The correct hand washing technique is shown in Figure-1 below (44).



Figure 1: Shows correct hand washing technique

Source: (44)

0. Wet your hands with water
1. Take some soap
2. Apply the soap to cover your entire hand
3. Rub your palms

4. Rub the right palm with the fingers, with the fingers on the left back and vice versa

5. Rub fingers and palms together

6. Rub the pivot point of the right hand and left thumb

7. Rub the palm of your left hand back and forth with the fingers of your right hand

8. Rinse with plenty of water

9. Dry your hands with a napkin or towel

10. Turn off the tap with a napkin

11. Your hands are now clean

In case of burns, inflammation and cuts on the hands of the staff working in the kitchen, they should not be in any of the preparation, cooking and serving stages. Persons with wounds should cover the wounds with waterproof tapes so that the wound does not become infected. In case of cuts on the hand or fingers, the wound should be covered with waterproof tape or silicone bands. The purpose of using waterproof tapes is to prevent the contact of bacteria that may be found in wounds with food. In addition, it is to ensure that microorganisms that can cause infection in raw foods do not infect the wound. Considering the possibility of mixing with food, blue, green, orange, etc. colors should be preferred (45).

2.4.1.7.2. Hair

Hair loss and dandruff are at risk as they can come into contact with food. The most common places in the body of pathogens such as bacteria, especially *Staphylococcus Aureus*, are the scalp. For this reason, it is necessary to wash the hair frequently and wear a rubber cap while working. Buckles should not be used to fix the caps (46).

2.4.1.7.3. Nose, Mouth, Ear

Studies have shown that *Staphylococcus Aureus* was found in more than 40% of the samples taken from the noses of adults. 15% of these examples include the staff working in the kitchen. Infections in the respiratory tract of the working personnel may be contaminated with food. For this reason, it is necessary to wear a protective mask in the kitchen or to cover the mouth with a handkerchief in case of coughing, and then it is necessary to clean the hands with the appropriate washing method. Nothing should be consumed during work or in work areas (47).

2.4.1.7.4. Uniform

The personnel working in OPMN are required to wear a clean, ironed, dark colored and washable fabric with pockets. In-kitchen uniforms should not be worn outside the kitchen and should be worn before starting work. At the end of the working hours, it is necessary to take off again and change to daily clothes. Clothes need to be cleaned and washed frequently.

2.4.1.8. Education in Kitchen

The staff working in the kitchen should receive training on order, hygiene and sanitation in the kitchen. Employee; It is the name given to the person who belongs to the professional group and who fulfills the given task in the best way. In-kitchen training; It means the training given to improve the knowledge and skills of the

personnel working in MN according to their duties in the kitchen (49). With this training given to personnel in TB, it is aimed to protect and improve public health by increasing the service quality (35).

2.5. Nutritional Disease

The definition of food-borne diseases by the World Health Organization is defined as “disease with an infectious or toxic character that can occur with the consumption of food or water”. There are many types of microorganisms that cause diseases and more than 250 disease-causing microorganisms that cause diseases (50). Most commonly, bacteria cause food-borne diseases. Viruses, parasites, molds, animal and vegetable origin toxicants also cause (51). Diseases caused by the consumption of a food that is exposed to pathogens of microorganisms and that contain its toxins are called 'Foodborne Disease'. It can be seen in 2 ways, depending on the type and type of bacteria (52).

1. Food Infection (caused by consumption of foods contaminated with disease-causing bacteria)

2. Intoxication (disease condition caused by consuming food containing toxin produced by bacteria)

These diseases constitute a serious public health problem in the World (53). In the United States, 9.4 million people suffer from foodborne illness each year, and it has been recorded that 55% are hospitalized and 1351 die. *Salmonella* spp., *Toxoplasma* goni, *Campylobacter* spp. It has been reported to originate from *Listeria monocytogenes* (54).

2.6 Food Safety Management Systems in Mass Nutrition Systems

In order to ensure the safety of consumed foods, human beings have tried to establish and implement standards. The Egyptians mandated food labeling, the Assyrians defined weight measurement methods, and the Romans inspected alcoholic beverages for hygiene. In medieval Europe, they passed laws to ensure the quality of sausage, bread, wine, eggs, cheese and beer (40).

With the development of technology, obligations regarding food safety have begun to emerge. Accordingly, traditional methods have been replaced by the concept of Quality Assurance (55).

The nutrition industry has been developing rapidly in recent years. Laws have developed standards to prevent food-borne diseases and hazards. The demand for safe and quality food has made it necessary to prevent hazards. Thereupon, some manufacturing companies have started to develop their perspectives on this issue. There are 2 basic systems in the implementation of quality systems. These systems are ISO 9000 and HACCP (Hazard Analysis at Critical Control Points) systems (56).

HACCP based food safety management systems; It is a scientific practice that identifies the hazards that may occur while producing food, controls all the steps from the first raw material of food and beverages to the final product and reaches the consumer, monitors and controls employees and supplier companies, and eliminates all kinds of food safety risks (33) (57) (58).

HACCP is important in terms of preventing risks in the production phase of foods. ISO 9000, on the other hand, is not production specific. HACCP-based food safety management systems include two important points. The first is food safety, and the second is food quality. In order to understand this system, it is necessary to dwell on some basic points. In order for the system to be fully implemented, technical requirements must be met and basic stage standards must be fully implemented. The HACCP system is important for the implementation of the GMP (good manufacturing practices) standard created by Codex Alimentarius. In order to implement the HACCP system, the control of production stages and places are two important steps that should be planned in the first preparation stage. However, while planning the HACCP system, the determination of critical control points, limits and processes, end product

availability, all process stages and personnel needs should be considered. The HACCP-based food safety management system is a system that requires careful use of check-lists and the system is checked with questions. Check-lists should be created in a format that includes "yes" and "no" answers. In particular, it should include hygiene and GMP practices. E.g; Answers should be sought for the questions that the suitability of the temperature is evaluated in the processing and processing of meat and whether the hygiene of the environment is ensured. HACCP and ISO 9000 quality systems check-list-style forms are frequently applied. HACCP is a hazard control tool used in food production. While ISO 9000 places emphasis on the safety of the relationship between the customer and the manufacturer, HACCP seeks to ensure food safety (56).

2.6.1. HACCP

HACCP is based on a contract between NASA and Pillsbury company in the 1950s. A food safety program was created by the FDA (American Food and Drug Administration) to ensure food safety for astronauts and was developed in 1971 and introduced at the US National Food Conference. In the system developed to produce safe food, it is aimed for astronauts to consume healthy food, and the tests and inputs used for raw materials, production, working personnel and businesses in all facilities producing food have been collected in a database and the hazards that may occur in food production and the critical control points that are sources have been determined. This is how the HACCP system started to be implemented and then it started to be widely used in all marketing activities (59) (57) (60).

HACCP was developed to ensure food safety. The main purpose is to prevent dangers and try to control risks. While applying the HACCP system, people who have received sufficient training and use scientific methods are assigned in this field. HACCP is a system developed for direct food safety that minimizes risks, reduces losses and is in harmony with other management systems (61).

HACCP was developed by the Codex Alimentarius Commission. In this system, danger and risk analysis is made at every stage and danger is prevented before it occurs. Hazard analyzes applied with the right techniques are an advantage for the company. It is a system that protects and improves the company in ensuring food safety and product development. This system includes principles that determine the negative effects that may occur in the final product and take protective measures for this. At the same time, it

is a system that eliminates biological, chemical and physical hazards that may occur on foods before they occur (59) (55)

On 28 January 2002, the legal regulation (General Food Law) containing the general principles of food law was adopted by the European Parliament and the Council. The main purpose of this law (General Food Law) is to provide an understandable approach to the development of food legislation. It defines the stages of food production and distribution, determines the principles, ensures the fulfillment of the obligations.

Studies on food law in Turkey started in the 1970s and the Turkish Food Codex was established on 16 November 1997. The latest article of law entered into force after publication in the Official Gazette No. 5179 "The Law on the Amendment of the Decree on the Production, Consumption and Inspection of Foods" on June 5, 2004. Regulation on Market Surveillance, Control and Inspection of Materials and Workplace Responsibilities.

From the farm to the plate, the understanding of safe food has been constantly renewed in the system. Accordingly, "ISO 22000 Food Safety Management Systems", based on HACCP principles in risk controls and compatible with this system, became a standard on June 3, 2004, and was accepted and put into effect by the Turkish Standards Industry (TSE) on April 24, 2006 (62) (60).

ISO 22000 Food Safety Management Systems Standard is to detect carries in food supply. It is a stand-alone system, but it is also compatible with ISO 9001:2000. This standard increases food safety and improves customer satisfaction by ensuring safe food production.

2.6.2. ISO 22000:2005 Food Safety Management Systems

The HACCP system is a system established to ensure food safety. This system identifies and tries to prevent risks arising from food from production to the final product. The ISO 22000:2005 system is a new system designed to ensure food safety. This system identifies organizations in the food chain and unifies all safety systems by creating and editing rules. The ISO 22000 system is a system based on the "quality" of the ISO 9000 series and the "food safety" of the HACCP system. The main purpose of the ISO 22000 system; to deliver safe and quality food to the consumer (60).

The ISO 22000:2005 standard was realized in Rome in July 2001 with the participation of 41 countries. The system, which was approved by 38 countries, was rejected by 3 countries (France, Japan, Australia). ISO 22000:2005 “Food Safety Management System” is the first internationally accepted standard. This standard has been developed and published by the International Standards Organization (ISO) together with associations and food experts from all over the world.

Due to the ever-increasing demand from consumers to reach safe food, many food safety standards have been developed by countries. But these standards have caused confusion. The ISO 22000:2005 standard has been developed to eliminate this confusion and to ensure international harmony (60).

On 27.01.2006, the Turkish Standards Industry (TSE) published the TS-EN-ISO 22000 Standard instead of the ISO 22000:2005 standard (60).

The HACCP standard is used by food manufacturers. ISO 22000, on the other hand, is used for certification purposes by the suppliers of the food industry, which provides transportation and storage services together with the chemical, material and equipment suppliers, as well as the food manufacturers. It is a food safety management system that covers all institutions in the food chain, including catering companies and packaging companies. (60).

ISO standard;

1. It is used in all food related companies.
2. It is the first international standard.
3. Associated with HACCP principles.
4. It is an auditable system with defined conditions.
5. Complies with ISO 9001:2000 and ISO 14001:2004 standards.

With this work; It was planned and carried out in order to determine the knowledge level of the personnel working in the kitchens of institutions (hospital, factory, plaza) providing MNS in Istanbul on hygiene and sanitation and to understand whether food safety is provided or not. (40)

3) INDIVIDUALS AND METHOD

3.1 Research Location and Time and Sample Selection

The study was carried out to measure the hygiene knowledge levels of a total of 134 personnel (head chef, cook, assistant cook, waiter, dishwasher, warehouseman, cashier and management team) working in the projects of the catering company located in Istanbul between October 2020 and March 2021. The total number of employees in the company is 403. However, 134 personnel participated in the research due to the pandemic. The study consists of mixed personnel working in the hospital kitchen, factory kitchen, and plaza kitchen.

The kitchens for which the hygiene status will be determined are located in the regions determined by the researcher.

This thesis study was approved by Yeditepe University Clinical Research Board with its decision dated 08.05.2020 and numbered 37068608-6100-15-1875. (Appendix-1)

3.2. Collection of Research Data

The kitchens where the research was carried out were built in the regions determined by the researcher. These points were determined in order to determine the hygiene knowledge levels.

The research was carried out in a single phase. Socio-demographic characteristics of the personnel working in the catering kitchen (age, marital status, gender, educational status), their duties in the kitchen (head chef, cook, assistant cook, waiter, dishwasher, warehouseman, cashier and management team), working hours in the office and in the institution, in-service A questionnaire consisting of 37 questions and 3 sub-titles (food, personnel and kitchen equipment hygiene) Hygiene Perception scale was applied in order to determine their education status, from whom they received the training, their disease status, the materials used to provide hygiene and their level of hygiene. (Appendix-2) The results of this study were evaluated with the 5-point Likert method.

3.3. Statistical Evaluation of Data

In order to determine the hygiene perception levels of the personnel participating in the study, the "Hygiene Perception Scale" with 37 questions containing a 5-point Likert (strongly agree, agree, no idea, disagree, strongly disagree) was applied.

There are 3 subsections in the Hygiene Perception Scale.

1. Food hygiene
2. Personnel hygiene
3. Kitchen equipment hygiene

In the study to determine food hygiene; To questions 1, 5, 8, 9, 10, 11, 16, 17, 18, 29, 32, 35, 36 and 37, 2, 3, 12, 13, 19, 21, 24, 25, Questions 27, 28 and 33 were included, and questions of 4, 14, 15, 20, 22, 23, 26, 30, 31 and 34 were included regarding kitchen equipment hygiene. In the answers given to the questions about hygiene, the answer to "I strongly agree" is evaluated as 5, I agree 4, I have no idea 3, I do not agree 2, I strongly disagree 1 point, while the items indicating negative practices in the questions about hygiene are 3, 4, 15, 17, 23, 27, 28, 32. , 34 and 36. strongly agree responses were evaluated on 1, agree 1, no idea 3, disagree 4, strongly disagree 5 points.

It is necessary to get 14-70 points from the food hygiene section, 13-65 points from the personnel hygiene section, 10-50 points from the kitchen equipment hygiene section and 37-185 points in total (63).

NCSS (Number Cruncher Statistical System) program was used for statistical analysis. Descriptive statistical methods (mean, standard deviation, median, frequency, percentage, minimum, maximum) were used while evaluating the study data. The conformity of the quantitative data to the normal distribution was tested with the Shapiro-Wilk test and graphical examinations. Student-t test was used for comparisons between two groups of normally distributed quantitative variables. One-way analysis of variance was used for comparisons between groups of more than two normally distributed quantitative variables, and Games-Howell and Bonferroni tests were used for pairwise evaluations. Kruskal-Wallis test and Dunn-Bonferroni test were used for

comparisons between groups of more than two quantitative variables that did not show normal distribution. Statistical significance was accepted as $p < 0.05$.

The evaluation of Cronbach's Alpha coefficient is made according to the following criteria:

If $0.0 < 0.40$, the scale is unreliable.

If $0.40 < 0.60$, the scale is low-confidence.

If $0.60 < 0.80$, it is quite reliable.

If $0.80 < 1.00$, the scale is highly reliable. (64)

When the scale internal consistency of the Hygiene Perception Scale applied in the study is examined; It was determined that $\alpha=0.752$ for the Food Hygiene sub-dimension, $\alpha=0.534$ for the Personnel Hygiene sub-dimension, $\alpha=0.558$ for the Kitchen Equipment Hygiene sub-dimension, and $\alpha=0.861$ for the scale total.

4. RESULTS

The study was carried out in the projects of the catering company located in Istanbul between October 2020 and March 2021, operating within the borders of Istanbul. The study was conducted with a total of 134 cases, 47% (n=63) female and 53% (n=71) male. The ages of the subjects participating in the study ranged from 18 to 62, with an average of 37.67 ± 11.76 years. 20.1% of the cases (n=27) were aged 25 and under, 20.9% (n=28) were between the ages of 26-35, and 32.1% (n=43) were between the ages of 36-45. and 26.9% (n=36) were over 45 years old.

Table 6: General Information of the Personnel

Age	<i>Ort±Ss</i>	37,67±11,76
	<i>Median (Min-Maks)</i>	39 (18-62)
	≤25 age	27 (20,1)
	26-35 age	28 (20,9)
	36-45 age	43 (32,1)
	>45 age	36 (26,9)
Gender	Women	63 (47,0)
	Men	71 (53,0)
Marial Status	Married	86 (64,2)
	Single	48 (35,8)
Education Status	Illitarate	1 (0,7)
	Literate	1 (0,7)
	Primary School	55 (41,0)
	Middle School	24 (17,9)
	High School	33 (24,6)

	College	6 (4,5)
	University	14 (10,4)
Disease State	Yes	19 (14,2)
	No	115 (85,8)

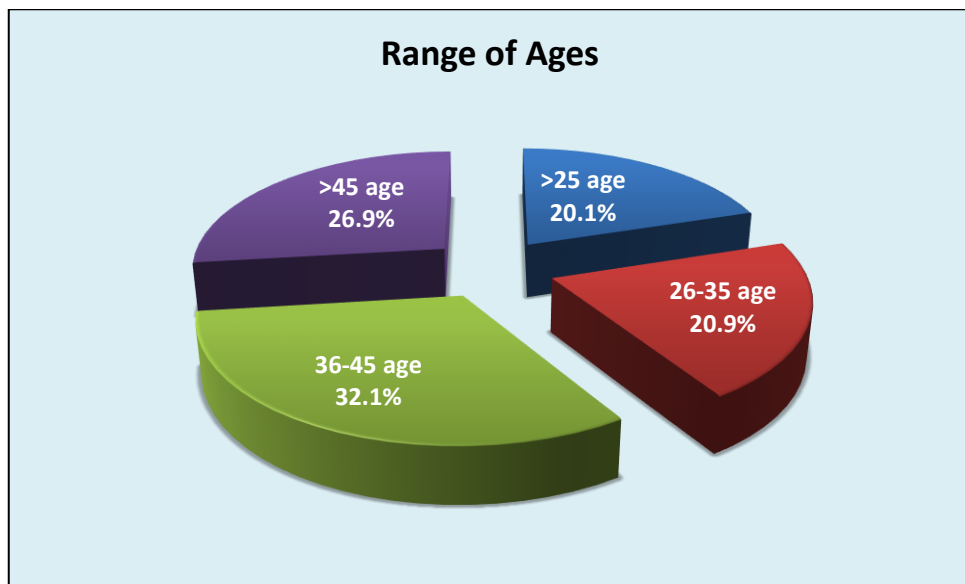


Figure 2: Range of Ages

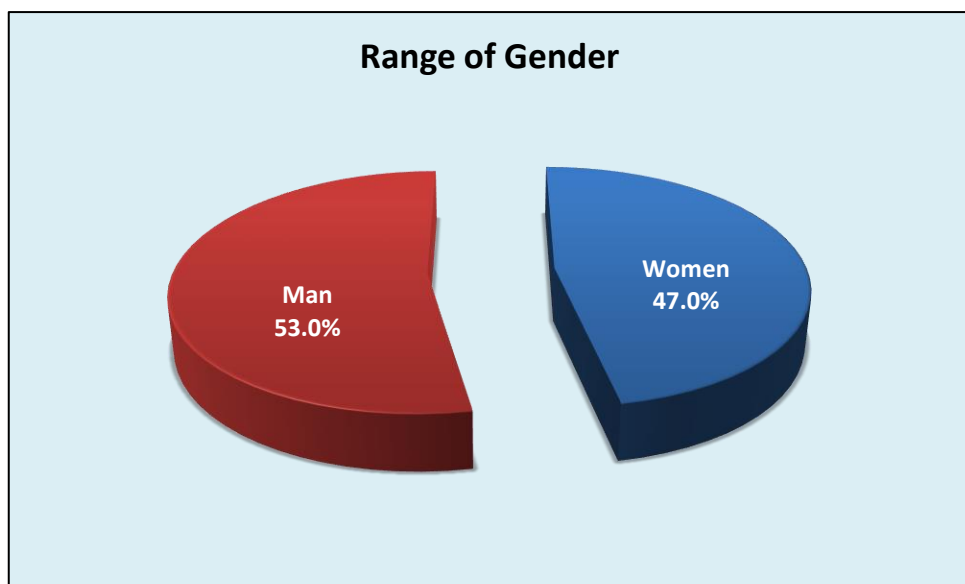


Figure 3: Range of Gender

It was observed that 64.2% (n=86) of the subjects participating in the study were married and 35.8% (n=48) were single.

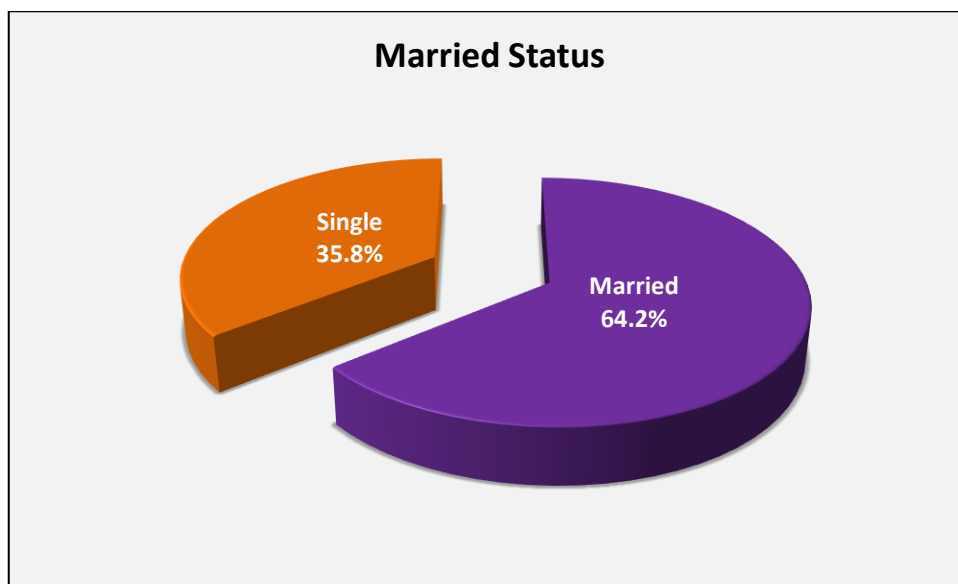


Figure 4: Married Status

0.7% (n=1) of the cases were illiterate, 0.7% (n=1) literate, 41% (n=55) primary school, 17.9% (n=24) secondary school, 24.6% (n=33) high school, 4.5% (n=6) college and 10.4% (n=14) university graduate.

It was observed that 14.2% (n=19) of the cases had a disease.

Table 7: Distribution of Personnel by Institution and Health Information

		n (%)
Position in Organization		
Head Chef		9 (6,7)
Chef		27 (20,1)
Chef Assistant		19 (14,2)
Head waiter- waiter		34 (25,4)
Dishwasher		25 (18,7)
Storekeeper, Cashier, Driver		9 (6,7)

			Manager	11 (8,2)
Working Organization	Time in	<1 year	44 (32,8)	
		1-3 year	37 (27,6)	
		4-6 year	27 (20,1)	
		7-9 year	11 (8,2)	
		≥10 year	15 (11,2)	
Working Position	Time in	≤1 year	47 (35,1)	
		1-4 year	40 (29,9)	
		5-8 year	10 (7,5)	
		9-10 year	15 (11,2)	
		≥11 year	22 (16,4)	
Previous Job		Same	80 (59,7)	
		Different	54 (40,3)	
Education Organization about hygiene	in about	Yes	118 (88,1)	
		No	16 (11,9)	
Educator		Food Engineer	88 (74,6)	
		Dietician	16 (13,6)	
		Food hygiene educator	28 (23,7)	
		Microbiologist	4 (3,4)	
		Other	3 (2,5)	
Educational Subjects		Hygiene	14 (11,9)	

	ISG hygiene	104 (88,1)
First Aid Training	Yes	108 (80,6)
	No	26 (19,4)
Health check-up before entering employment	Yes	133 (99,3)
	No	1 (0,7)
Health screening by employer twice a year	Yes	129 (96,3)
	No	5 (3,7)
Need to use gloves, bonnets, shoe covers, masks and aprons	Yes	128 (95,5)
	No	1 (0,7)
	Sometimes	5 (3,7)

6.7% (n=9) of the participants were chief cook, 20.1% (n=27) were cooks, 14.2% (n=19) were assistant cooks, 25.4% (n=34) waiter-waitress, 18.7% (n=25) dishwasher, 6.7% (n=9) storekeeper, cashier, driver and 8.2% (n=11) manager in the unit.

The duration of working in the institution is less than 1 year in 32.8% (n=44) of the cases, 1-3 years in 27.6% (n=37) and 4-6 years in 20.1% (n=27) was. years, 8.2% (n=11) were between 7-9 years, 11.2% (n=15) were 10 years and above.

35.1% (n=47) of the cases 1 year or less, 29.9% (n=40) 1-4 years, 7.5% (n=10) 5-8 years, 11.2% (n=15) were between 9-10 years, 16.4% (n=22) were 11 years or more.

While 59.7% (n=80) of the cases stated that they did the same job in their previous job, 40.3% (n=54) stated that they worked in a different job.

While 88.1% (n=18) of the participants in the study stated that they received in-service training, 74.6% (n=88) of those who received the training were food engineers, 13.6% (n=16) of dietitians, 23.7%. Six of them (n=28) stated that they received training

from a food hygiene educator, 3.4% (n=4) from a microbiologist, and 2.5% (n=3) from other people. 11.9% (n=14) of the trainees stated that they received training on hygiene and 88.1% (n=104) on ISG hygiene.

80.6% of the cases (n=108) stated that they received first aid training.

99.3% of the cases (n=133) stated that they had undergone a health check before they were employed.

96.3% of the cases (n=129) stated that they had been screened twice a year by the employer.

While 95.5% (n=128) of the cases stated that they needed to use gloves, bonnets, shoe covers, masks and aprons in their work, 3.7% (n=5) sometimes required it, 0.7% (n= 1) stated that it is not required.

Table 8: Distribution of Materials Required to be Used in the Job Done

	Glove	Bonnet	Shoe Covers	Mask	Aprons
	n (%)	n (%)	n (%)	n (%)	n (%)
Purchasing	76 (57,1)	79 (59,4)	62 (46,6)	84 (63,2)	67 (50,4)
Storage	68 (51,1)	68 (51,1)	53 (39,8)	78 (58,6)	69 (51,9)
Preparing	90 (67,7)	90 (67,7)	63 (47,4)	90 (67,7)	83 (62,4)
Cooking	88 (66,2)	90 (67,7)	65 (48,9)	90 (67,7)	85 (63,9)
Service	97 (72,9)	98 (73,7)	67 (50,4)	100 (75,2)	93 (69,9)

Table 8 shows the distribution of the use of gloves, bonnets, shoe covers, masks and aprons in the work they do.

Table 9: Distribution of the Answers Given to the Hygiene Perception Scale Questions

	Strongly Disagree		Disagree		Not know/ No Idea		Agree			
	n	%	n	%	n	%	n	%	n	%
1. Food hygiene; is the purification of food from disease-causing factors	1	0,7	1	0,7	5	3,7	44	32,8	83	61,9
2. Every personnel is a bacteria carrier and has the ability to spread bacteria	0	0,0	11	8,2	2	1,5	34	25,4	87	64,9
3. It is inconvenient to keep kitchen and food wastes together in the kitchen.	4	3,0	10	7,5	4	3,0	31	23,1	85	63,4
4. Food service personnel can touch food without wearing gloves.	89	66,4	19	14,2	0	0,0	15	11,2	11	8,2
5. Cooked and uncooked foods should be prepared on	32	23,9	6	4,5	3	2,2	29	21,6	64	47,8

separate counters.

6. Bacteria are usually spread through the air.	3	2,2	19	14,2	8	6,0	50	37,3	54	40,3
7. Food poisoning can damage an institution's image.	1	0,7	6	4,5	1	0,7	29	21,6	97	72,4
8. Hands are organs that host many microorganisms.	0	0,0	4	3,0	2	1,5	33	24,6	95	70,9
9. Bacteria can spread from the digestive tract and open wound.	0	0,0	9	6,7	2	1,5	35	26,1	88	65,7
10. Personnel must pass a health check every 6 months.	0	0,0	6	4,5	2	1,5	27	20,1	99	73,9
11. Hot food should be kept at 60 degrees and above until it is served.	1	0,7	6	4,5	5	3,7	37	27,6	85	63,4
12. It is inconvenient for the	7	5,2	9	6,7	1	0,7	20	14,9	97	72,4

employees to enter the kitchen with the clothes and shoes they wear outside the kitchen.

13. Kitchen staff should wear clean and ironed caps or bonnets.

1	0,7	1	0,7	0	0,0	35	26,1	97	72,4
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14. Cold storage and refrigerators must be properly placed and clean.

2	1,5	4	3,0	1	0,7	23	17,2	104	77,6
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15. It is okay for sunlight to enter cellars or warehouses.

68	50,7	36	26,9	5	3,7	11	8,2	14	10,4
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16. Food preparation and service areas should be dry and well-maintained.

3	2,2	4	3,0	0	0,0	25	18,7	102	76,1
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17. There is no harm in storing products containing milk, egg and meat products at high room temperature.

66	49,3	28	20,9	5	3,7	12	9,0	23	17,2
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18. When purchasing meat, the purchaser's stamp of meat, etc. circumstances must be taken into account.	5	3,7	4	3,0	2	1,5	24	17,9	99	73,9
19. Mouth parts of water glasses should not be touched by hand.	4	3,0	1	0,7	1	0,7	25	18,7	103	76,9
20. There should be sufficient shower and bath services for the personnel at the workplace.	3	2,2	3	2,2	2	1,5	40	29,9	86	64,2
21. Flu, flu, diarrhea gb. Personnel with illness should be employed in the background or reported.	2	1,5	0	0,0	0	0,0	26	19,4	106	79,1
22. Clean and healthy water analyzed in the laboratory should be used in the kitchen.	5	3,7	1	0,7	5	3,7	33	24,6	90	67,2

23. Forks and knives should be held by their handles.	1	0,7	0	0,0	1	0,7	26	19,4	106	79,1
24. To wash hands hygienically; means washing them up to the wrists with warm water and soap and brushing the nails.	3	2,2	3	2,2	2	1,5	30	22,4	96	71,6
25. Personnel should pay attention to hygiene when entering and leaving the work area.	1	0,7	1	0,7	1	0,7	17	12,7	114	85,1
26. Food preparation areas should be cleaned after food preparation.	13	9,7	1	0,7	1	0,7	19	14,2	100	74,6
27. It is okay for the staff to smoke in the kitchen area.	99	73,9	13	9,7	2	1,5	6	4,5	14	10,4
28. It is not necessary to wash the work clothes that have been cleaned once and	81	60,4	23	17,2	3	2,2	6	4,5	21	15,7

used again.

29. If food is to be heated and cooled, it should be heated and cooled in shallow tubs.

10	7,5	12	9,0	21	15,7	32	23,9	59	44,0
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30. During dishwashing, the temperature of the water and the disinfection of utensils are required for hand washing dishes.

2	1,5	1	0,7	3	2,2	36	26,9	92	68,7
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31. There is no harm in keeping the cooked food outside 2 hours before the service.

39	29,1	31	23,1	11	8,2	21	15,7	32	23,9
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32. Wounds on hands should be covered with a waterproof bandage..

2	1,5	2	1,5	2	1,5	33	24,6	95	70,9
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33. All kitchen equipment should be dried in the open

22	16,4	20	14,9	18	13,4	33	24,6	41	30,6
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air after washing, drying
and sanitizing.

34. Once thawed, food should not be re-frozen.	23	17,2	9	6,7	3	2,2	12	9,0	87	64,9
35. The food should be tasted with another spoon other than the spoon with which the food is mixed.	4	3,0	6	4,5	1	0,7	20	14,9	103	76,9
36. Frozen foods should be thawed in a temperate kitchen environment.	33	24,6	16	11,9	9	6,7	23	17,2	53	39,6
37. Garbage in the kitchen; It should be disposed of close to the preparation and cooking areas and in angled trash bins/bins.	9	6,7	16	11,9	4	3,0	31	23,1	74	55,2

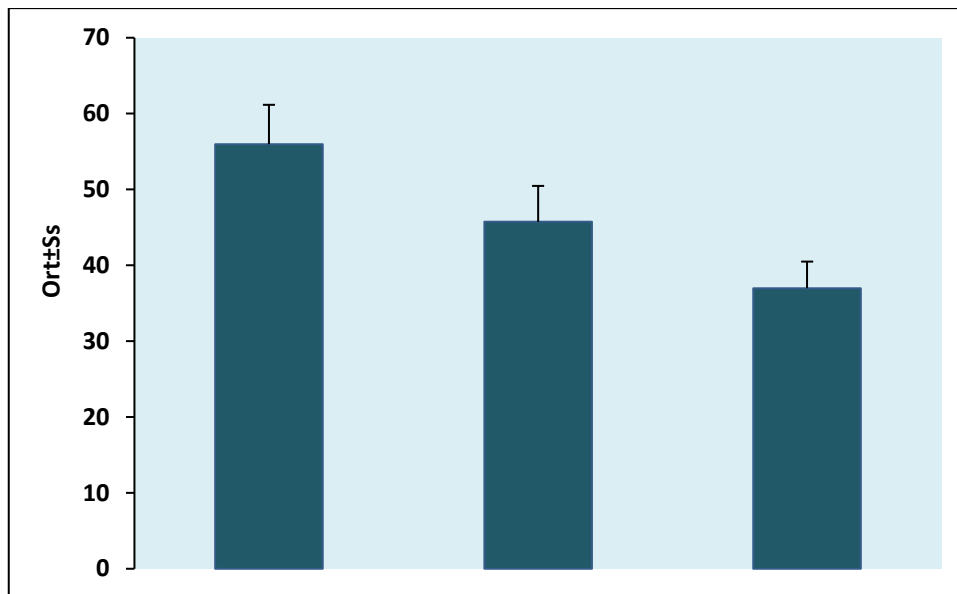
The distribution of the answers given by the subjects participating in the study to the Hygiene Perception Scale questions is shown in Table 9.

Table 10: Evaluation of Hygiene Perception Scale Scores and Internal Consistency

	Item Number	Median (Min- Maks)	Ort±Ss	Cronbach's Alpha
Food Hygiene	14	57 (38-66)	55,98±5,18	0,752
Personnel Hygiene	11	46 (15-53)	45,74±4,73	0,534
Kitchen Equipment Hygiene	10	37 (29-45)	36,99±3,50	0,558
Hygiene Total Score	37	149 (101-168)	147,31±11,42	0,861

The average scores of the participants in the Hygiene Perception Scale "Food Hygiene" sub-dimension were 55.98±5.18, the average scores they got from the "Personnel Hygiene" sub-dimension were 45.74±4.73, and the average scores they got from the "Kitchen Appliance Hygiene" sub-dimension. mean scores were 36.99±3.50 and the mean scores they got from the total scale were 147.31±11.42.

When the internal consistency of the scale is examined; It was determined as $\alpha=0.752$ for the Food Hygiene sub-dimension, $\alpha=0.534$ for the Personnel Hygiene sub-dimension, $\alpha=0.558$ for the Kitchen Equipment Hygiene sub-dimension, and $\alpha=0.861$ for the scale total.



1: Food Hygiene

2: Personnel Hygiene

3: Kitchen Equipment Hygiene

Figure 5: Distribution of Hygiene Perception Scores Sub-Dimension Scores

Table 11: Evaluation of Hygiene Perception Scale Scores by Demographic Characteristics

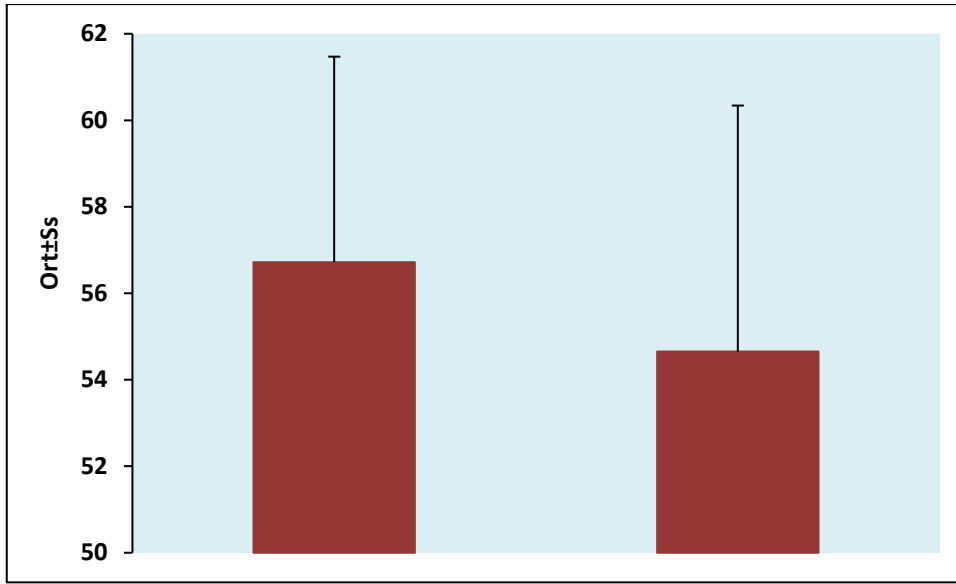
			Hygiene Perception Scale			
			Food Hygiene	Personnel Hygiene	Kitchen Equipment Hygiene	Total Score
Age	≤25 Age (n=27)	Ort±Ss	55,59±4,56	46,26±3,51	37,19±2,99	147,26±9,31
		Median (Min-Maks)	56 (48-66)	47 (36-52)	38 (30-43)	150 (128-168)
	26-35 age	Ort±Ss	55,86±5,84	46,00±4,73	36,00±3,71	146,5±12,46

		(n=28)	Median (Min-Maks)	57 (38-66)	47 (37-53)	37 (30-42)	148,5 (110-163)
		36-45 age (n=43)	Ort±Ss	55,79±4,85	45,02±4,04	36,49±3,37	145,93±10,7
			Median (Min-Maks)	57 (38-65)	45 (35-53)	37 (29-42)	145 (120-162)
		>45 age (n=36)	Ort±Ss	56,58±5,63	46,00±6,17	38,22±3,59	149,61±12,87
			Median (Min-Maks)	58 (42-66)	47 (15-53)	38 (30-45)	153 (101-166)
			Test Value	F:0,233	F:0,496	F:2,656	F:0,739
			p	^b 0,873	^b 0,686	^b 0,051	^b 0,530
Gender	Women (n=63)		Ort±Ss	55,59±5,44	46,22±3,63	37,02±2,81	147,22±10,08
			Median (Min-Maks)	56 (38-65)	47 (36-53)	37 (30-42)	148 (120-162)
	Man (n=71)		Ort±Ss	56,32±4,96	45,31±5,52	36,97±4,03	147,38±12,56
			Median (Min-Maks)	58 (38-66)	46 (15-53)	38 (29-45)	150 (101-168)
			Test Value	t:-0,820	t:1,115	t:0,074	t:-0,080
			p	^a 0,414	^a 0,267	^a 0,941	^a 0,937
Married Status	Married (n=86)		Ort±Ss	56,72±4,75	45,88±5,15	37,21±3,62	148,48±11,45
			Median (Min-Maks)	57 (38-66)	47 (15-53)	38 (29-45)	151 (101-166)
	Single (n=48)		Ort±Ss	54,65±5,69	45,48±3,9	36,6±3,27	145,21±11,18
			Median (Min-Maks)	55,5 (38-66)	46 (36-52)	37 (30-43)	146,5 (110-168)

		Test Value	t:2,255	t:0,473	t:0,960	t:1,598	
		<i>p</i>	^a 0,026*	^a 0,637	^a 0,339	^a 0,112	
Educational Status	Primary education and below (n=81)	<i>Ort±Ss</i>	56,09±5,78	45,69±5,21	37,32±3,66	147,83±12,78	
		<i>Median (Min-Maks)</i>	57 (38-66)	47 (15-53)	38 (29-45)	151 (101-168)	
	High School (n=33)	<i>Ort±Ss</i>	54,82±4,43	44,85±4,07	36±3,5	144,12±9,72	
		<i>Median (Min-Maks)</i>	55 (48-66)	45 (36-52)	37 (30-44)	145 (123-163)	
	University (n=20)	<i>Ort±Ss</i>	57,45±3,14	47,4±3,17	37,3±2,52	150,45±6,03	
		<i>Median (Min-Maks)</i>	58 (50-63)	47 (41-53)	37 (33-43)	151,5 (137-159)	
			Test Value	F:3,176	F:1,844	F:1,784	F:4,236
			<i>p</i>	^b 0,049*	^b 0,162	^b 0,172	^b 0,019*
^a Student-t Test		^b Oneway ANOVA Test		* <i>p</i> <0,05			

According to age and gender, the scores of the subjects from the Hygiene Perception Scale "Food Hygiene", "Personnel Hygiene", "Kitchen Appliance Hygiene" sub-dimensions and the total scale did not show a statistically significant difference (p>0.05).

The scores of the married cases in the "Food Hygiene" sub-dimension of the Hygiene Perception Scale were found to be statistically significantly higher than the single cases (p=0.026; p<0.05).



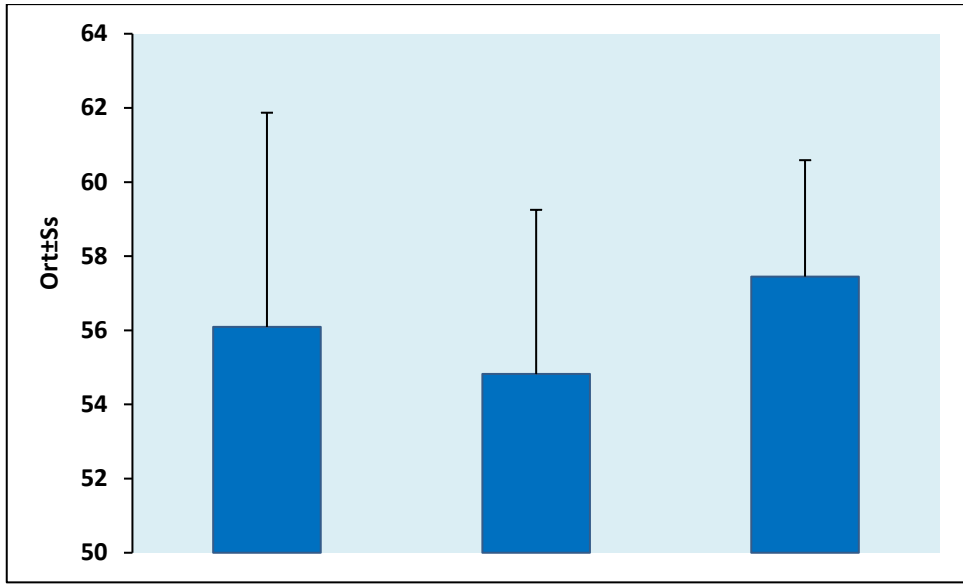
1: Married

2: Single

Figure 6: Distribution of Food Hygiene Sub-Dimension Scores by Marital Status

According to marital status, the scores of the cases from the Hygiene Perception Scale "Personnel Hygiene", "Kitchen Appliance Hygiene" sub-dimensions and the total scale did not show a statistically significant difference ($p>0.05$).

A statistically significant difference was found between the scores of the subjects in the "Food Hygiene" sub-dimension of the Hygiene Perception Scale according to their education level ($p=0.049$; $p<0.05$). According to the Games-Howell test results made to determine the difference; The scores of the subjects with high school education in the sub-dimension of the scale were found to be significantly lower than those with a university education level ($p=0.039$; $p<0.05$).



1: Primary education and below

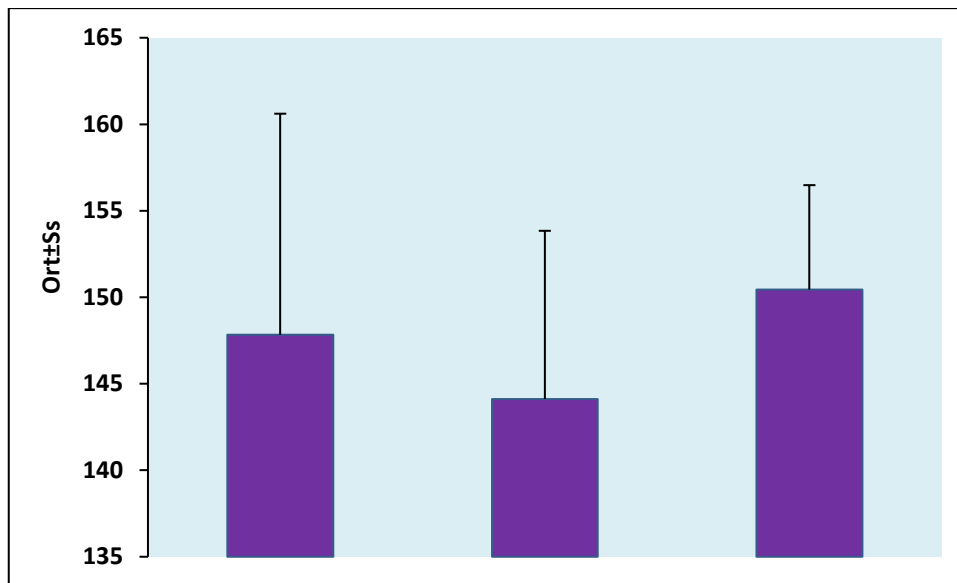
2. High School

3. University

Figure 7: Distribution of Food Hygiene Sub-Dimension Score by Educational Status

The scores of the subjects in the Hygiene Perception Scale "Personnel Hygiene" and "Kitchen Appliance Hygiene" sub-dimensions did not show a statistically significant difference ($p>0.05$).

A statistically significant difference was found between the scores of the subjects from the Hygiene Perception Scale total according to their education level ($p=0.019$; $p<0.05$). According to the Games-Howell test results made to determine the difference; The scores of the subjects with high school education from the total scale were found to be significantly lower than those with a university education level ($p=0.019$; $p<0.05$).



1: Primary education and below

2. High School

3. University

Figure 8: Distribution of Hygiene Perception Scale Total Score by Educational Status

Table 12: Evaluation of Hygiene Perception Scale Scores by Occupational Characteristics

		Hygiene Perception Scale				
			Food Hygiene	Personnel Hygiene	Kitchen Equipment Hygiene	Total Score
Position in Organization	Head Chef (n=9)	Ort±Ss	57,11±3,86	46,33±3,28	36,44±3,21	148,78±7,26
		Median				
		(Min- Maks)	58 (52-65)	47 (42-51)	37 (31-42)	145 (136- 157)
	Chef	Ort±Ss	57,7±4,09	46,78±3,42	37,41±3,2	151,11±8,42

	(n=27)	<i>Median</i>				
		<i>(Min-Maks)</i>	58 (50-66)	47 (37-52)	38 (29-43)	152 (128-163)
	Chef	<i>Ort±Ss</i>	57,63±3,53	46,74±4,12	37,37±2,79	150,58±8,9
	Asisstant					
	(n=19)	<i>Median</i>				
		<i>(Min-Maks)</i>	57 (50-66)	47 (35-53)	37 (31-42)	151 (127-168)
	Head	<i>Ort±Ss</i>	55,24±4,83	45,38±6,76	37,29±3,76	146,32±12,78
	Waiter-					
	Waiter	<i>Median</i>				
	(n=34)	<i>(Min-Maks)</i>	54 (48-66)	46 (15-53)	38 (30-45)	147 (101-166)
	Dishwashe	<i>Ort±Ss</i>	53,8±7,68	44,8±4,12	37,12±4,28	143,88±14,98
	r (n=25)					
		<i>Median</i>				
		<i>(Min-Maks)</i>	55 (38-62)	46 (36-51)	38 (30-44)	147 (110-161)
	Storekeepe	<i>Ort±Ss</i>	53,89±4,54	43,44±4,5	34,89±3,66	140,33±11,41
	r, Cashier,					
	Driver	<i>Median</i>				
		<i>(Min-Maks)</i>	55 (46-59)	43 (37-52)	35 (30-40)	141 (123-159)
	Manager	<i>Ort±Ss</i>	56,91±3,39	46,09±2,81	36,27±2,57	147,64±6,7
	(n=11)					
		<i>Median</i>				
		<i>(Min-Maks)</i>	57 (50-63)	47 (41-49)	36 (33-42)	149 (137-158)
		Test Value	$\chi^2:9,388$	$\chi^2:7,737$	$\chi^2:5,564$	$\chi^2:8,577$

		<i>p</i>	°0,153	°0,258	°0,474	°0,199
Working Time in Organization	<1 year (n=44)	Ort±Ss	54,84±5,85	46,41±4,31	37,05±3,21	146,32±11,67
		Median (Min-Maks)	56 (38-65)	46,5 (35-53)	38 (30-44)	148,5 (110-162)
	1-3 year (n=37)	Ort±Ss	55,43±5,18	44,46±6,38	36,32±3,9	145,05±13,25
		Median (Min-Maks)	56 (42-66)	45 (15-53)	36 (30-45)	148 (101-166)
	4-6 year (n=27)	Ort±Ss	57,48±4,39	45,89±2,78	37,93±3,63	150,48±8,14
		Median (Min-Maks)	57 (46-65)	46 (39-50)	38 (29-43)	149 (133-161)
	7-9 year (n=11)	Ort±Ss	56,82±5,56	46±5	36,45±3,11	147,09±13,51
		Median (Min-Maks)	57 (49-66)	47 (37-52)	38 (30-40)	150 (123-168)
	≥10 year (n=15)	Ort±Ss	57,33±3,39	46,47±3,52	37,2±3,3	150,2±8,41
		Median (Min-Maks)	58 (50-62)	47 (37-51)	38 (32-42)	151 (128-160)
	Test Value	χ²:5,740	χ²:3,700	χ²:3,723	χ²:3,569	
	<i>p</i>	°0,219	°0,448	°0,445	°0,467	

Working Time in Position	≤1 year (n=47)	Ort±Ss	54,74±5,04	45,28±4,22	36,87±3,27	144,96±10,86	
		Median (Min- Maks)	55 (38-65)	46 (35-53)	37 (30-44)	147 (110- 162)	
	1-4 year (n=40)	Ort±Ss	56,35±6,02	45,93±6,48	36,9±4,16	147,95±14,32	
		Median (Min- Maks)	58 (38-66)	47 (15-53)	37 (30-44)	153 (101- 168)	
	5-8 year (n=10)	Ort±Ss	54,8±4,52	46,2±3,94	37,6±1,51	147,7±8,88	
		Median (Min- Maks)	56 (46-61)	47 (39-50)	37,5 (35- 40)	151,5 (133- 157)	
	9-10 year (n=15)	Ort±Ss	57,67±4,53	45,2±3,55	36,6±3,09	148,13±9,2	
		Median (Min- Maks)	58 (50-66)	46 (37-50)	38 (32-42)	150 (128- 163)	
	≥11 year (n=22)	Ort±Ss	57,32±4,06	46,55±2,86	37,41±3,76	150,41±8,52	
		Median (Min- Maks)	58 (50-66)	46,5 (42- 52)	37,5 (29- 45)	150 (137- 166)	
			Test Value	χ²:7,819	χ²:3,991	χ²:0,696	χ²:5,278
			p	°0,098	°0,407	°0,952	°0,260

^cKruskal Wallis Test

The scores of the subjects from the Hygiene Perception Scale "Food Hygiene", "Personnel Hygiene", "Kitchen Appliance Hygiene" and the total scale did not show a statistically significant difference according to the position in the institution ($p>0.05$).

According to the duration of employment in the institution, the scores of the subjects from the Hygiene Perception Scale "Food Hygiene", "Personnel Hygiene", "Kitchen Appliance Hygiene" and the total scale did not show a statistically significant difference ($p>0.05$).

The scores of the subjects from the Hygiene Perception Scale "Food Hygiene", "Personnel Hygiene", "Kitchen Equipment Hygiene" and the total scale did not show a statistically significant difference ($p>0.05$).

Table 13: Evaluation of Hygiene Perception Scale Scores by Receiving In-Service Training

		Hygiene Perception Scale				
			Food Hygiene	Personnel Hygiene	Kitchen Equipment Hygiene	Total Score
Education in Organization about hygiene	Yes (n=118)	Ort±Ss	55,97±5,29	45,83±4,88	37,28±3,48	147,69±11,78
		Median (Min-Maks)	57 (38-66)	46,5 (15-53)	38 (29-45)	151 (101-168)
	No (n=16)	Ort±Ss	56,06±4,46	45,06±3,55	34,88±2,96	144,5±8,05
		Median (Min-Maks)	56,5 (47-65)	45 (37-50)	35 (30-39)	145 (128-157)
		Test Değeri	t:-0,070	t:0,608	t:2,638	t:1,048
		p	0,945	0,544	0,009**	0,297
Educator	Food	Ort±Ss	56,17±5,34	45,51±5,17	37,36±3,55	147,68±12,1

r	Engineer (n=88)	<i>Median (Min-Maks)</i>	57 (38-66)	46 (15-53)	37,5 (30-45)	150,5 (101-168)
	Other (n=30)	<i>Ort±Ss</i>	55,37±5,18	46,77±3,81	37,03±3,29	147,7±10,95
		<i>Median (Min-Maks)</i>	56,5 (38-65)	47 (38-53)	38 (29-42)	151 (110-162)
		Test Değeri	t:-0,717	t:1,221	t:-0,448	t:0,007
		p	^a0,475	^a0,225	^a0,655	^a0,994
	Dietician(n=16)	<i>Ort±Ss</i>	56,5±3,81	46,94±3,17	37,25±3,59	149,81±8,52
		<i>Median (Min-Maks)</i>	58 (50-65)	47 (41-52)	37,5 (29-42)	151,5 (137-162)
	Other (n=102)	<i>Ort±Ss</i>	55,88±5,5	45,66±5,08	37,28±3,48	147,35±12,21
		<i>Median (Min-Maks)</i>	57 (38-66)	46 (15-53)	38 (30-45)	151 (101-168)
		Test Değeri	t:-0,433	t:-0,977	t:0,037	t:-0,775
		p	^a0,666	^a0,331	^a0,971	^a0,440
	Food Hygiene Educator (n=28)	<i>Ort±Ss</i>	55,75±5,07	47,79±4,07	36,71±2,95	148,86±11,21
		<i>Median (Min-Maks)</i>	57 (38-66)	49 (38-53)	37,5 (30-44)	151,5 (110-168)
	Other (n=90)	<i>Ort±Ss</i>	56,03±5,38	45,22±4,96	37,46±3,62	147,32±11,98
		<i>Median (Min-Maks)</i>	57 (38-66)	46 (15-53)	38 (29-45)	149,5 (101-166)
		Test Value	t:0,246	t:-2,483	t:0,985	t:-0,601
		p	^a0,806	^a0,014*	^a0,327	^a0,549

^aStudent-t Test

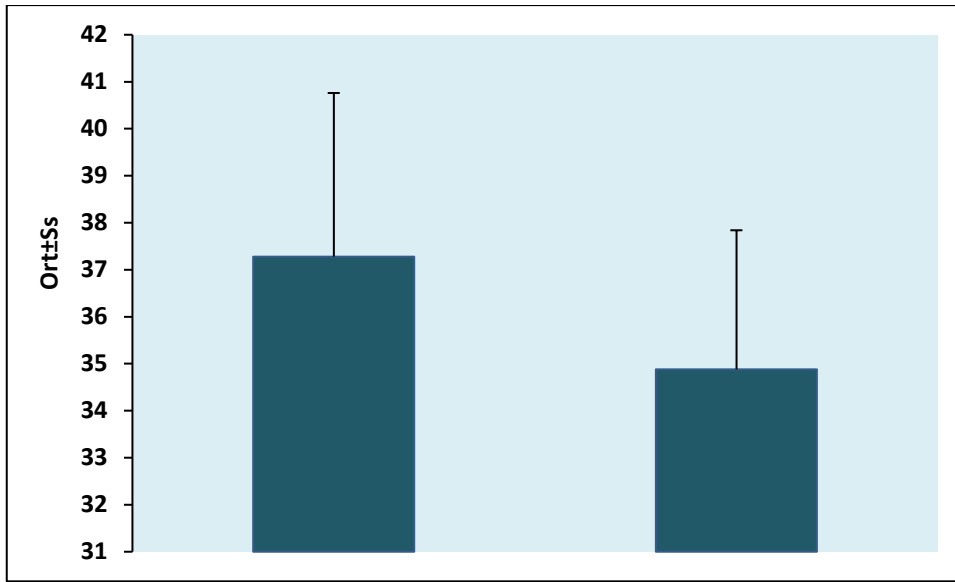
^cKruskal Wallis Test *p<0,05

**p<0,01

According to the in-service training status, the scores of the subjects from the Hygiene Perception Scale "Food Hygiene", "Personnel Hygiene" sub-dimensions and the total scale did not show a statistically significant difference ($p>0.05$).

The scores of the subjects who received in-service training in the Hygiene Perception Scale "Hygiene of Tools in the Kitchen" sub-dimension were found to be statistically significantly higher than those who did not receive training ($p=0.009$; $p<0.01$).

Figure 9: Distribution of Kitchen Equipment Hygiene Score by Receiving In-Service Training

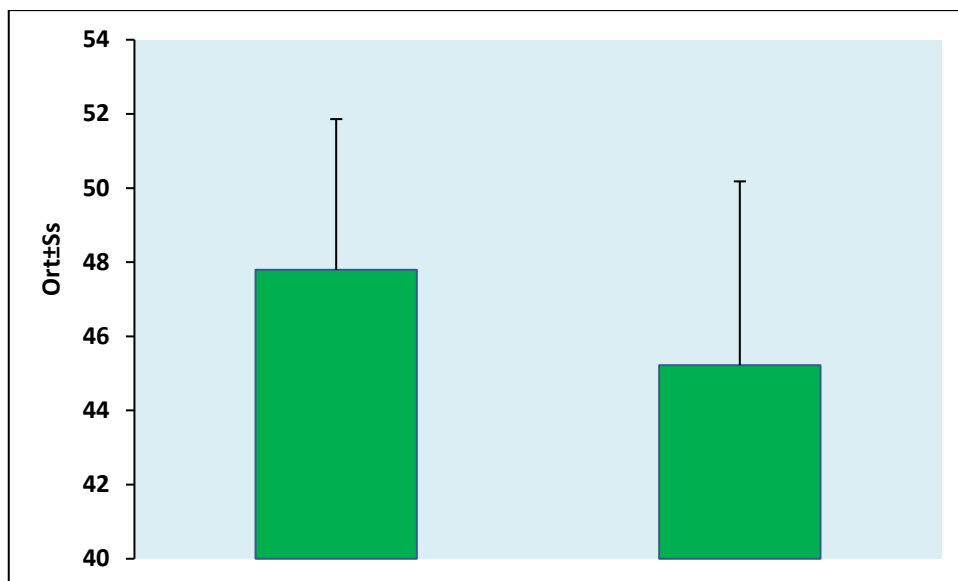


1: Yes

2. No

The scores of the subjects from the Hygiene Perception Scale "Food Hygiene", "Personnel Hygiene" sub-dimensions and the total scale did not show a statistically significant difference ($p>0.05$).

The scores of the subjects who received training from a food hygiene educator in the Hygiene Perception Scale "Hygiene of Tools in the Kitchen" sub-dimension were found to be statistically significantly higher than those who received training from other educators ($p=0.014$; $p<0.05$).



1: Food Hygiene Educator

2. Other

Figure 10: Distribution of Personnel Hygiene Score by Trainee

5. DISCUSSION

In this research, it was carried out to evaluate the sufficiency of 134 personnel (head chef, cook, assistant cook, waiter, dishwasher, warehouseman, cashier and management team in terms of hygiene and sanitation) working in the kitchens of the Institutions with Collective Nutrition in Istanbul.

5.1. Information on Personnel Participating in the Study

In a study similar to this study, male cooks' scores on food hygiene questions were found to be higher than female cooks, and the difference was statistically significant ($p<0.05$) (35). In the study of Kabacık (2008), when the answers given by the personnel to the food safety questions were examined, a significant difference was found according to gender ($p<0.01$). Women gave more correct answers than men (22).

Again, in a similar study, no statistical difference was found between gender and the hygiene and sanitation perception levels of the personnel ($p>0.05$) (65). In a study by Sani and Siow, it was shown that most of the participants (74.1%) were male (66). In this study, the reason why men are more busy in kitchens is explained by the need for muscle power due to the high work intensity and heavy equipment. Iyigun (2007) reported that 83.8% of those working in hospital kitchens were male, in his study in Ankara to measure productivity in mass nutrition and to examine the factors affecting it. (67)

It is seen that 35.8% of the personnel participating in the study are single and 64.2% are married. Contrary to our study, in another similar study, it was reported that 55.9% of the personnel were single and 44.1% were married (68).

Koksal et al. no statistically significant difference was found between hygiene perception scores according to marital status (69).

Sanlier et al. In the study in which 522 hotel personnel working in the food and beverage department in Ankara participated, a statistically significant difference was found between the kitchen equipment hygiene score and the total hygiene score according to the education level of the personnel ($p<0.05$) (70).

In another similar study, it is seen that 62.7% of the personnel have primary school or below education level, and 47.3% of them are secondary school and above (71).

In another study conducted to measure the hygiene perception of personnel working in the food industry, it was reported that the majority (64.7%) were primary and secondary school graduates, 27.8% were high school graduates, and 4.8% were university graduates. (72) In the study conducted by Kabacık (2008), a statistical difference was found between the educational status of the scores of the personnel from the food safety test. High school and high school scores were reported to be higher than primary and secondary school graduates (22).

Similar to our study, in the study of Hacet, no significant difference was found according to the position of the personnel ($p>0.05$) (5). In a study conducted by Şimşek (2006), the scores of the personnel according to their answers to the questions about food safety according to their positions were found to be statistically significant ($p<0.01$). It was determined that the highest average was the chef (81.6), while the lowest average was the dishwasher (55.6) (73). In the studies conducted by Ünlüönen and Cömert, a significant difference was found in all groups in personnel hygiene scores according to the duty of the personnel ($p<0.05$) (74).

In a similar study by Aktaş et al, 46.8% of the working personnel work in production, 48.8% in service and 4.4% in other jobs (75).

In the study of Ünlüönen and Cömert, no statistically significant difference was found between working hours and hygiene perception scores ($p>0.05$) (74). In a similar study conducted by Akbulut with 52 personnel, it is concluded that the hygiene score of the personnel working for 1-5 years is 34.75, 46.67 for 6-10 years, and 60 points for employees working for 11-15 years, the hygiene score increases as the working time increases achieved (76).

In a study conducted with 473 cafeteria personnel in China, it was stated that 50% of the employees had previously worked in the kitchen area for 1-3 years (77). In a similar study conducted in the Turkish Republic of Northern Cyprus, it was reported that the majority of the personnel (66.7) who participated in the study had previously worked in the field of mass nutrition but worked in a different position (5).

In another study, it was reported that 69.1% of the employees did not work in their current job, and 12.7% of them previously worked in this field but in a different position (78).

Depending on the increase in education level, the effect of hygiene education may be higher due to the increase in knowledge comprehension and task awareness. However, an increase can be seen in the knowledge of food hygiene, kitchen equipment hygiene and personnel hygiene (79). The scores of the subjects from the Hygiene Perception Scale "Food Hygiene", "Personnel Hygiene" sub-dimensions and the total scale did not show a statistically significant difference according to the educational status of the food engineer and dietitian ($p>0.05$).

In Bıyıklı's (2011) study, when the points that the personnel got from the sub-heading of food hygiene and from the total questions according to their educational status, it was determined that those who received training got higher scores than those who did not, and a statistically significant difference emerged ($p<0.05$). No significant difference was found in the sub-headings of kitchen equipment hygiene and personnel hygiene. The study does not show parallelism with our study ($p>0.05$) (35).

In Hacet's study, no statistical difference was found when the hygiene scores of the personnel were examined according to who received the in-service training in the hygiene test performed before and after the training ($p>0.05$). Again, at the end of the same study, it was reported that the pre-training food hygiene score was 52, the personnel hygiene score was 53.5, the kitchen equipment score was 42, and the total hygiene score was 147. In addition, it is also shown that the post-training scores increased by 58, 59, 45, and 160.5, respectively. It was determined that the education given together with this study was statistically significant ($p<0.05$) (5). This increase shows how important education is. In another study by Sonmaz and Şanlıer, it was emphasized that 46.9% of the personnel did not receive hygiene training related to the kitchen, while 17% received food safety and hygiene training (80).

In a similar study conducted by Kabacık (2006), it was stated that 88.3% of the personnel received in-service training, 61% received this training by a private company representative, and 9.6% was given by the workplace owner (22). In-service training in the field of MS is also supported by studies that attach the necessary importance. In the study of Şanlıer and Yaman, it was emphasized that it would be beneficial to provide

continuous and effective training to the personnel and to plan and supervise training by experts (81). In another study, it was determined that 57% of the personnel received hygiene training and it was reported that 36.7% of them received from a dietitian, 28% from another company and 16.7% from the enterprise. (82)

In the study conducted by Çakıroğlu and Uçar with 400 personnel working in the food sector, it was revealed that the hygiene knowledge of the personnel was insufficient and they needed training in this regard, and the importance of education was emphasized in order to develop behavior change (79). Sylvester et al. In another study, it is emphasized that the level of personnel hygiene knowledge can be increased with the training to be given to the personnel working in the field of MS (83). While 95.5% of the participants stated that they needed to use gloves, bonnets, shoe covers, masks and aprons in their work, 3% stated that it is sometimes necessary and 0.7% did not. It is important to use protective clothing in MNS kitchens to prevent any microbiological contaminants from contaminating the food. In another study by Sargin, it was stated that 16.7% of the working personnel wear bonnet-caps, 2.8% wear shoe covers, 5.6% wear gloves and none of them wear masks.

It was stated that 85.2% of the participants did not have a disease, while 14.8% of them had at least one chronic disease diagnosed by a doctor. According to the regulation published by the Ministry of Health, stool culture should be done at least once a year, stool should be examined every 6 months, throat and nose culture should be done once a year, and chest X-ray should be done once a year as periodic porter scan (84).

99.3% of those who participated in the study stated that they had a health check before they were employed, and 96.3% of them stated that they had been screened twice a year by the employer

6. CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

- 53% of the employees are men and 47% are women.
- 64.2% of the working personnel are married and 35.8% are single.
- 0.7% of the employees are illiterate, 0.7% are literate, 41% are primary school, 17.9% are secondary school, 24.6% are high school, 4.5% are college and 10.4 of them are university graduates.
- 6.7% of the working personnel are chief cook, 20.1% are cooks, 14.2% are assistant cooks, 25.4% are chief waiter-waitresses, 18.7% are dishwashers, 6%, 7 of them work as warehousemen, cashiers, drivers and 8.2% of them work in the management unit.
- 60.4% of them worked in the corporate kitchen for 4 years or less. 39.6% of them work in the corporate kitchen for 4 years or more.
- While 59.7% of the employees worked in the same job in their previous job, 40.3% worked in a different job.
- 88.1% of the participants received in-service training. 74.6% of them received training from food engineers, 13.6% from dieticians, 23.7% from food hygiene educators, 3.4% from microbiologists and 2.5 (n=3) received training from other people.
- 80.6% of the personnel (n=108) received first aid training.
- While 99.3% of the employees pass through a health check before entering employment, 96.3% of them undergo a health screening twice a year by the employer.
- 95.5% of the personnel reported that their job requires the use of gloves, bonnets, shoe covers, masks and aprons. The remaining 3.7% reported that it sometimes required, while 0.7% did not.
- It is reported that 85.2% of the participants do not have a disease, while 14.8% of them have at least one chronic disease diagnosed by a doctor.
- The scores they got from the sub-dimensions of the Hygiene Perception Scale and the total scale according to age and gender did not show a statistically significant difference ($p>0.05$).

- The scores of married individuals in the "Food Hygiene" sub-dimension of the Hygiene Perception Scale were found to be statistically significantly higher than those of single subjects ($p=0.026$; $p<0.05$).
- According to marital status, the scores of the individuals from the Hygiene Perception Scale "Personnel Hygiene", "Kitchen Appliance Hygiene" and the total of the scale do not show a statistically significant difference ($p>0.05$).
- A statistically significant difference was found between the scores of the personnel in the "Food Hygiene" sub-dimension of the Hygiene Perception Scale according to their education level ($p=0.049$; $p<0.05$). The scores of the subjects with high school education in the scale sub-dimension were found to be significantly lower than those with a university education level ($p=0.039$; $p<0.05$).
- The scores of the individuals in the Hygiene Perception Scale "Personnel Hygiene" and "Kitchen Appliance Hygiene" sub-dimensions do not show a statistically significant difference according to their education level ($p>0.05$).
- A statistically significant difference was found between the scores of the individuals from the Hygiene Perception Scale total according to their education level ($p=0.019$; $p<0.05$). The scores of the subjects with high school education in the scale sub-dimension were found to be significantly lower than those with a university education level ($p=0.019$; $p<0.05$).
- The scores of individuals from the sub-dimensions of the Hygiene Perception Scale and the total of the scale do not show a statistically significant difference according to the position in the institution ($p>0.05$).
- The scores of the personnel from the sub-dimensions of the Hygiene Perception Scale and the total scale do not show a statistically significant difference ($p>0.05$).
- The scores of the personnel from the sub-dimensions of the Hygiene Perception Scale and the total of the scale do not show a statistically significant difference ($p>0.05$).
- According to the in-service training status, the scores of the subjects from the Hygiene Perception Scale "Food Hygiene", "Personnel Hygiene" sub-dimensions and the total of the scale do not show a statistically significant difference ($p>0.05$).

- The scores of the subjects who received in-service training in the Hygiene Perception Scale “Hygiene of Tools in the Kitchen” sub-dimension were found to be statistically significantly higher than those who did not receive training ($p=0.009$; $p<0.01$).
- The scores of the subjects who received training from a food hygiene instructor in the Hygiene Perception Scale “Hygiene of Tools in the Kitchen” sub-dimension were found to be statistically significantly higher than those who received training from other educators ($p=0.014$; $p<0.05$).

6.2. Recommendations

- Due to the difficult and complex structure of TBS, failure to provide hygiene and sanitation carries a risk for public health. In order to prevent this, necessary precautions should be taken and food safety should be ensured.
- The frequency of the trainings given in TBS should be increased, a training plan should be created and its continuity should be ensured.
- Dietitian, Food Engineer and Food Hygiene Trainer, who will ensure the implementation of in-kitchen quality management systems, must be included in TBS.
- If health checks and porter inspections need to be increased, it is recommended to be done every 3 months.
- It is necessary to increase the frequency of inspections and adopt it as a public health policy by both internal and external state-private institutions.
- In addition to using only presentations as a training method, applied practices should also be included.

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8. APPENDICES

ANNEX-1 Ethics Committee Approval Form



Sayı : 37068608-6100-15- 1875

08/05/2020

Konu: Klinik Araştırmalar
Etik Kurul Başvurusu hk.

İlgili Makama (Ayşegül Y.)

Yeditepe Üniversitesi Sağlık Bilimleri Fakültesi Beslenme ve Diyetetik Bölümü Dr. Öğr.Üyesi Hülya Demir'in sorumlu araştırmacı olduğu **“İstanbul’da Toplu Beslenme Hizmeti Veren Kurum Mutfaklarında Çalışan Personelin Hijyen ve Sanitasyon Açısından Değerlendirilmesi”** isimli araştırma projesine ait Klinik Araştırmalar Etik Kurulu (KAEK) Başvuru Dosyası (1839) kayıtlı Numaralı KAEK Başvuru Dosyası , Yeditepe Üniversitesi Klinik Araştırmalar Etik Kurulu tarafından **07.05.2020** tarihli toplantıda incelenmiştir.

Kurul tarafından yapılan inceleme sonucu,yukarıdaki isim belirtilen çalışmanın yapılmasının etik ve bilimsel açıdan uygun olduğuna karar verilmiştir. (KAEK Karar No:1216)

ANNEX-2 Informed Consent Form for Research Purposes

BİLGİLENDİRİLMİŞ ONAM FORMU

Araştırmanın Adı:İstanbul’ da Toplu Beslenme Hizmeti Veren Kurum Mutfağında Çalışan Personelin Hijyen ve Sanitasyon Açısından Değerlendirilmesi

Sayın gönüllü,

Yukarıda adı yazılı araştırmaya katılmak üzere davet edilmiş bulunuyorsunuz. Bu araştırmada yer almayı kabul etmeden önce, araştırmanın ne amaçla yapılmak istendiğini anlamanız ve kararınızı bu bilgilendirme çerçevesinde özgürce vermeniz gerekmektedir. Aşağıdaki bilgileri lütfen dikkatlice okuyunuz, sorularınız olursa sorunuz ve açık yanıtlar isteyiniz.

Bu araştırmada, İstanbul’ da TBYK hizmeti veren mutfaklarda çalışan personelin (aşçıbaşı, aşçı, aşçı yardımcısı, garson, bulaşıkçı, depocu, kasiyer ve yönetim ekibi) hijyen ve sanitasyon açısından yeterliliğinin değerlendirilmesi amacıyla yapılacaktır. Araştırma için Yeditepe Üniversitesi Hastanesi Klinik Araştırmalar Etik Kurulu’ ndan izin alınmıştır. Sizden bu çalışmada anketi tam eksiksiz ve doğru olarak doldurmanız istenecektir. Bu işlem 15 dakikanızı alacaktır. Bunun size ve yakınlarınıza hiçbir zararı olmayacaktır. Çalışmaya katılmakla parasal yük altına girmeyeceksiniz ve size de herhangi bir ödeme yapılmayacaktır.

Bu araştırmada yer almak tümüyle sizin isteğinize bağlıdır. Araştırmada yer almayı reddedebilirsiniz ya da başladıktan sonra yarıda bırakabilirsiniz. Bu araştırmanın sonuçları bilimsel amaçlarla kullanılacaktır. Araştırmadan çekilmeniz ya da araştırmacı tarafından araştırmadan çıkarılmanız halinde, sizle ilgili veriler kullanılmayacaktır. Ancak veriler bir kez anonimleştikten sonra araştırmadan çekilmeniz mümkün olmayacaktır. Sizden elde edilen tüm bilgiler gizli tutulacak, araştırma yayınlandığında da varsa kimlik bilgilerinizin gizliliği korunacaktır.

Yukarıda yer alan ve araştırmaya başlanmadan önce gönüllülere verilmesi gereken bilgileri içeren metni okudum (ya da sözlü olarak dinledim). Eksik kaldığını düşündüğüm konularda sorularımı araştırmacılara sordum ve doyurucu yanıtlar aldım. Yazılı ve sözlü olarak tarafıma sunulan tüm açıklamaları ayrıntılarıyla anladığımı kanıslındayım. Çalışmaya katılmayı isteyip istemediğim konusunda karar vermem için yeterince zaman tanındı. Bu koşullar altında, araştırma kapsamında elde edilen şahsıma ait bilgilerin bilimsel amaçlarla kullanılmasını, gizlilik kurallarına uyulmak kaydıyla sunulmasını ve yayınlanmasını, hiçbir baskı ve zorlama altında kalmaksızın, kendi özgür irademle kabul ettiğimi beyan ederim.

İmza/Tarih:

İmza/Tarih: 18.10.2020

Katılımcının adı soyadı

Sorumlu Araştırmacının adısoyadı

Dr. Öğr. Üyesi Hülya Demir

ANNEX-3 Questionnaire Form

**İSTANBUL' DA TOPLU BESLENME HİZMETİ VEREN KURUM
MUTFAKLARINDA ÇALIŞAN PERSONELİN HİJYEN VE SANİTASYON
AÇISINDAN DEĞERLENDİRİLMESİ**

Anket No:

Tarih:

Anketör Adı-Soyadı: Dyt. Ayşegül YAĞIZ

**Adres: Yeditepe Üniversitesi Beslenme ve Diyetetik Fakültesi
İSTANBUL/ATAŞEHİR**

1. GENEL BİLGİLER

1.Ad - Soyad:

2.Cinsiyet:

1.Kadın

2. Erkek

3.Doğum Tarihi:

4.Yaş:

5.Medeni Durum:

1.Evli

2. Bekar

6.Eğitim Durumunuz:

1.Okur yazar değil

2.Okur yazar

3.İlkokul

4.Ortaokul

5.Lise

6.Yüksekokul

7. Üniversite

8. Diğer.....

2. PERSONEL KURUM VE SAĞLIK BİLGİLERİ

9.Kurumdaki Göreviniz:

1.Aşçıbaşı

2. Aşçı

3.Şef Garson

4.Garson

5. Diğer.....

10. Bu kurumda kaç yıldır çalışmaktasınız?

1. 1 yıldan az

2. 1-3 yıl

3.4-6 yıl

4. 7-9 yıl

5. 10 yıl

6.

Diğer.....

11. Şu anda yapmakta olduğunuz görevinizde kaç yıldır çalışıyorsunuz ?

1. 1 yıl

2. 1-4 yıl

3. 5-8 yıl

4. 9-10 yıl

5. 11 yıl ve üzeri

12. Daha önce de şu anda yapmakta olduğunuz işte mi çalışıyordunuz ?

1. Aynı iş

2. Farklı iş

13. Daha önce Toplu Beslenme Hizmeti sunan kurumlardan hizmet içi eğitimi aldınız mı?

1. Evet 2. Hayır

14. Cevabınız evet ise bu eğitimi kimden aldınız ?

1. Gıda mühendisi 2. Diyetisyen 3. Besin Hijyen Eğitmcisi 4. Mikrobiyolog
5. Diğer.....

15. Cevabınız evet ise aldığınız eğitim konuları nelerden oluşmaktaydı?

.....
.....
.....
...

16. İlk yardım eğitimi aldınız mı?

1. Evet 2. Hayır

17. Herhangi bir hastalığınız var mı?

1. Evet 2. Hayır

18. Cevabınız evet ise aşağıdakilerden hangisi/hangileridir?

1. Kalp-damar hastalıkları 2. Sindirim sistemi hastalıkları 3. Kemik Eklem
hastalıkları 4. Diyabet 5. Karaciğer 6. safra
hastalıkları 7. Anemi(kansızlık) 8. Böbrek hastalıkları 9. Guatr
10. Solunum yolu hastalıkları 11. Sinir sistemi hast. 12. Deri hastalıkları
13. Göz hast. 14. Alerji 15. Kadın hastalıkları
16. Kanser 17. Diğer

19. İşe girmeden önce sağlık kontrolünden geçtiniz mi?

1. Evet

2. Hayır

20. İşveren tarafından yılda iki kez sağlık taramasından geçiriliyor musunuz?

1. Evet

2. Hayır

21. Sizce yaptığınız iş eldiven, bone, galoş ,maske ve önlük kullanmayı gerektiriyor mu?

1. Evet

2. Hayır

3. Bazen

4.

Bilmiyorum

22. Cevabınız evet ise;

	ELDİVEN	BONE	GALOŞ	MASKE	ÖNLÜK
SATINALMA					
DEPOLAMA					
HAZIRLAMA					
PİŞİRME					
SERVİS					

SORULAR	KESİNLİKLE KATILIYORUM	KATILIYORUM	BİLMİYORUM/FİKRİM YOK	KATILMIYORUM	KESİNLİKLE KATILMIYORUM
1.Besin hijyeni; hastalık yapıcı etmenlerden besinin temizlenmesidir					
2.Her personel bir bakteri taşıyıcısıdır, ve bakteri yayabilme özelliğine sahiptir					
3.Mutfakta, mutfak ve besin çöplerinin bir arada tutulması sakıncalıdır.					
4.Yiyecek servisinden sorumlu personel yiyeceklere eldiven giymeden dokunabilir					
5.Pişmiş ve pişmemiş yiyecekler ayrı tezgâhlarda hazırlanmalıdır					
6.Bakteriler genellikle hava yolu ile yayılırlar.					
7.Besin zehirlenmesi bir kurumun imajını zedeleyebilir.					
8.Eller birçok mikroorganizmayı barındıran organdır.					
9.Bakteriler sindirim sisteminden ve açık yaradan yayılabilir.					
10.Personel her 6 ayda bir sağlık kontrolünden geçmelidir.					
11.Sıcak yemekler servis edilene kadar 60 derece ve daha üzeri sıcaklıkta tutulmalıdır.					
12.Çalışanların dışarıda mutfak dışında giydikleri kıyafet ve ayakkabılarıyla mutfak içine girmeleri sakıncalıdır.					
13.Mutfak personeli temiz ve ütülü kep ya da bone giymelidir.					
14.Soğuk depo ve buzdolapları düzgün yerleştirilmiş ve temiz olmalıdır.					

15.Güneş ışığının kiler ya da depolara girmesinde bir sakınca yoktur .					
16.Besin hazırlama ve servis alan zeminleri kuru ve bakımlı olmalıdır.					
17.Süt, yumurta ve et ürünleri içeren ürünlerin yüksek oda sıcaklığında saklanması sakınca yoktur.					
18.Et satın alınırken, satın alan kişinin etin damgasına vb. durumlara dikkat etmesi gerekmektedir.					
19.Su bardaklarının ağız kısımlarına el dokundurulmamalıdır.					
20.İş yerinde personel için yeterli sayıda duş ve banyo hizmeti bulunmalıdır.					
21.Nezle, grip, ishal gb. rahatsızlığı bulunan personel geri planda çalıştırılmalı ya da rapor verilmelidir.					
22.Labaratuvarda analiz edilen temiz ve sağlıklı sular mutfakta kullanılmalıdır.					
23.Çatal ve bıçaklar saplarından tutulmalıdır.					
24.Elleri hijyenik şekilde yıkamak; onları bileklere kadar sıcak su ve sabun ile yıkamak ve tırnakları fırçalamak anlamına gelir					
25.Çalışma alanına girerken ve çıkarken personelin hijyene dikkat etmesi gerekmektedir.					
26.Besin hazırlama yerleri, besin hazırlandıktan sonra temizlenmelidir.					
27.Personelin mutfak alanında sigara içmesinde sakınca yoktur.					
28.Bir kere temizlenip kullanılmış iş kıyafetlerinin tekrar yıkanmasına gerek yoktur.					
29.Yemekler ısıtılacak ve soğutulacaksa sığ küvetlerde ısıtılmalı, soğutulmalıdır.					
30.Bulaşık yıkama sırasında, elde bulaşık yıkamada suyun sıcaklık derecesi ve kap kacağın dezenfekte edilmesi gereklidir.					

31. Pişirilen yiyeceklerin servisten 2 saat önce dışarıda tutulmalarında sakınca yoktur.					
32. Ellerdeki yaralar su geçirmeyen bir bandaj ile kaplanmalıdır.					
33. Tüm mutfak ekipmanları yıkandıktan, kurulandıktan ve sanitize edildikten sonra açık havada kurutulmalıdır.					
34. Besinler çözündürüldükten sonra tekrar dondurulmamalıdır.					
35. Yemeğin karıştırıldığı kaşık dışında bir başka kaşıkla yemeğin tadına bakılmalıdır.					
36. Dondurulmuş besinler mutfak ortamı ılıman bir ortamda çözündürülmelidir.					
37. Mutfakta çöpler; hazırlama ve pişirme alanlarına yakın mesafede ve köşeli çöp bidonlarına/kutularına atılmalıdır.					