

One of the work accidents in the military unit: food poisoning and solution recommendations

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Abstract. Food poisoning is one of the common diseases that affect public health a lot. There is a high risk of food poisoning in military units, as in all places where mass nutrition is provided. Food poisoning is an infection or intoxication caused by consumption of food. Although food poisoning usually causes mild and short-term discomfort, it can sometimes be seen seriously, with fatal consequences. In this study, food poisoning, which is one of the occupational accidents in military units, was examined. Especially in recent years, food poisoning has been experienced seriously in military units, many military personnel get sick and even martyrs are given. As a result of the research, it was revealed that food poisoning cases were experienced in 17 military units and 1499 military personnel were affected and unfortunately 1 soldier was martyred. In this study, safety precautions to be taken to prevent and minimize food poisoning experienced in military units and health conditions to be provided are discussed in detail within the framework of occupational safety and worker health.

Key words: food poisoning, military, safety

Introduction

Nowadays, it is seen that the importance given to the field of occupational health and safety has increased. Occupational health contains the protecting and improving physical, mental and social well beings of the workers who works in all kinds of jobs, preventing employees' health loss due to working conditions, protecting employees from factors that may adversely affect their health during work, placing and maintaining a job suitable for employees' physiological and psychological structures, in conclusion ensuring that the work is suitable for the employee and the employee for the job. Work safety is a set of technical rules that are conditions to be fulfilled by the employer regarding to minimize or completely disposal the dangers that the employee is exposing to during the work.

Occupational health and safety are scientific and at the same time systematic studies carried out in order to protect the health and safety of employees due to various reasons and to protect the health and safety of the employees to continue business activities. Occupational health and safety studies consist of two parts. The first part is about employee health issues. These include detection, diagnosis and treatment of health problems. In the other section, technical aspects arising from dangers that may threaten the safety of employees are examined. Occupational health and safety is considered as the planning and implementation of preventive measures by evaluating the health and safety hazards in the enterprises.

The International Labor Organization (ILO) estimates that around 2.3 million workers worldwide die each year from accidents or occupational diseases

in the workplace; this corresponds to more than 6000 deaths every day. While 340 million occupational accidents occur annually worldwide, 160 million employees suffer from occupational accidents (1). The situation in our country is not different from worldwide. The number of occupational accidents in 2013 is 191389, 221366 in 2014, and 241547 in 2015. According to the Social Security Institution (SGK) data, the number of occupational accidents in 2016 is 286068. According to the SGK data announced for 2017, the number of occupational accidents is 359 653. SGK statistics show that the increase in work accidents registered in Turkey after the year 2012. (SGK, 2018) Occupational accidents and deaths, injuries, loss of money and time due to occupational accidents are among the important problems that need to be solved worldwide.

The Turkish Army performs operations in all weather conditions with its technology, knowledge and educational superiority, its weapon power based on the national war industry to the maximum extent, its ability to fight against terrorism and cross-border operations. In addition, it has a rightful and distinguished place among the most powerful armies of the world owing to its ability to serve with extraordinary discipline and force under the NATO flag in the most sensitive points of the world. It is a large army with a defense budget of 19 billion dollars, 735 thousand military personnel, 1,055 aircraft, UAVs, helicopters total air power, 206 warplanes, 2 thousand 622 battle tanks and 149 navy power. According to independent studies, the Turkish Armed Forces (TSK) is the 13th strongest army in the world. (2)

Military organizations are organizations that work under intense stress, housing thousands of personnel in a very disciplined structural system. Occupational accidents can be experienced in these organizations, just like in non-governmental organizations. However, with the recently developed occupational safety and accident prevention system, a serious transformation has been occurring. Despite this, there are still occupational accidents and many personnel are injured and martyred in these accidents. One of the occupational accidents experienced in military units is food poisoning.

As a result of the literature review on this subject, no studies directly addressing occupational accidents

in military units have been found. In this respect, this study will be a conducive to raise awareness on the subject and to be discussed by scientists. In addition, by drawing the attention of military decision makers to occupational health and safety, it will increase their knowledge level on preventing occupational accidents and taking necessary precautions. With the results obtained, it is thought that it will be a guide for the interested parties, as very important action templates will be prepared for military decision makers.

In this study, the safety precautions to be taken to prevent and minimize food poisoning, which is one of the occupational accidents in military units, and the health conditions to be provided within the framework of occupational safety and worker health are discussed in detail.

One of the Occupational Accidents occurring in Military units: Food Poisoning

The risk of food poisoning is high in all military units that provide mass nutrition services. Sufficient and appropriate protective measures must be taken in all areas of the unions, such as dining halls, kitchens, canteens, cafes, etc. and this must be strictly controlled.

Food poisoning is called an infection or intoxication caused by consumption of food. Food poisoning are common diseases that affect public health a lot. Although they are mostly mild and short-term illnesses, they can lead to a more severe course of the disease and even fatal consequences due to the factors that cause poisoning depending on different factors, food, human, etc. (3)

Poisoning caused by pathogenic microorganisms in food is an important health problem both in our country and in many parts of the world (4). Today, more than 200 diseases are transmitted to humans through foods. The first recorded major food poisoning incident in human history was seen in France in 943 and it was determined that 40,000 people died as a result of consuming rye infected with *Claviceps purpurea* (5).

It is estimated that there are approximately 48 million cases of foodborne illness in the United States each year. This shows that 1 out of 6 people experience foodborne disease every year. According to Food

and Drug Administration (FDA), every year 128,000 people are hospitalized due to foodborne diseases and 3000 of them die (6).

The main cause of many food-borne diseases is bacteria among microorganisms. Bacteria-based food diseases occur quickly and progress rapidly. Viruses, parasites, molds and animal and plant originated toxic substances are also other factors in food poisoning (7). *Staphylococcus aureus*, which generally grows in foods with high protein and starch content; it is especially common in meat and dairy products, fish, potatoes, pasta and foods made from them. Foods that are not produced and stored under hygienic conditions and kept in the open pose a danger in terms of staphylococcal poisoning (8). Regardless of the fact that there are no formal reports on the provision of food poisoning in Turkey, studies from several countries reveals that, approximately 1 / 3rd of the cases of food poisoning are caused by contaminated food and enterotoxigenic *S. aureus* (9). It is stated that staphylococcal food poisoning in the USA causes approximately 1.5 billion dollars of expenditure each year due to product loss and treatment expenses (10). According to Turkish Statistical Institute (TUIK) data, 108,246 people were hospitalized due to food between 1993-2005 and 1702 deaths were detected between 1993-2002 (TUIK, 2006).

The spoilage of a food is an indication that an environment where microorganisms can develop and reach high numbers is formed during the supply, transportation, processing and storage of the raw material. Many factors can contaminate the food and cause the food to become a poisoning agent. This negativity may be biological in character due to the contamination of other microorganisms and parasites, especially bacteria, as well as with chemicals such as the residues of pesticides and caustic substances used against insects and rodents (11). It is important to know the possible contamination sources in food in order to prevent contamination from these sources. The main causes of poisoning are insufficient cooling, the ratio of days between preparation and consumption, infected personnel, keeping at inappropriate temperature, insufficient cooking, insufficient heating, use of contaminated materials, inadequate cleaning of equipment, use of bad food materials and reuse of increased food (12).

Causes of food-borne poisoning in mass consumption places are reported as insufficient cooling (46%), one or more days between preparation and consumption (21%), infected personnel (20%), wrong heat application (16%), inadequate cooking (16%), insufficient heating (16%), use of contaminated material (11%), cross contamination (7%), inadequate cleaning of equipment (7%), use of bad food supplies (5%) and use of leftover meals (4%). It is known that all of these factors are related to time and temperature (13).

In order to generate food reliability and maintain it in mass consumption places, rules regarding food hygiene, personnel hygiene, food and beverage related areas and tool-equipment hygiene must be followed. An effective food safety management system, such as the Hazard Analysis and Critical Control Point (HACCP) system, should be established to create and maintain the necessary hygiene rules in the kitchen and other areas of the military unit. With the activities of this security system, the food-borne health problems that may occur in humans will be prevented (13).

Aim and Methods

This study is a retrospective and descriptive study aimed at detecting food poisoning in our country's military units during the 4-year period covering 2016-2019.

Document scanning method, one of the qualitative research methods, was used in the research.

In this research, a general scanning was aimed with document analysis method. In this way, a general due diligence has been attempted.

Population and Sampling of the Research

In the last four years, all food poisoning cases occurring in military units in Turkey on the internet and on news sites constitute the main population and no sampling restriction has been made.

Place and Time of the Research

The research was conducted by retrospectively scanning the online internet and newspaper data between January and March 2020.

Data Collection Process and Tools

Official data on occupational accidents in military units are not shared with civilians for military reasons. In our country, it is known that by making serious studies on occupational safety and worker health, regulations and directives were prepared, distributed to all places of duty and instructed for their implementation. In addition to these, statistical data on occupational accidents are also collected annually and situation analyzes regarding them are of course made. However, no information on these is shared with civilians by official authorities for confidentiality reasons.

For this purpose, in a period of about 3 months, news about food poisoning in about 400 military units

experienced in the last 4 years were collected from news sites. In the next stage, since the same event in the aforementioned news is reported by many web-sites, it has been filtered one by one.

Results and Discussion

In this section, findings and comments obtained from the data collected during the research process are included. In this context, numerical information about military occupational accidents obtained from various sources has been interpreted in figures and tables. There was no food poisoning in military units in 2016. Below, it is possible to see the tables on the basis of

Table 1. Food Poisoning Cases Between 2017-2019

	Accident		Soldiers	
	Type	Location	Wounded (N)	Death (N)
Year of 2017				
1	Food Poisoning	Kastamonu	38	-
2	Food Poisoning	Kastamonu	7	-
3	Food Poisoning	Edirne	14	-
4	Food Poisoning	Manisa	700	1
5	Food Poisoning	Sivas	31	-
6	Food Poisoning	Diyarbakır	25	-
7	Food Poisoning	Bursa	10	-
8	Food Poisoning	Muğla	87	-
Total			912	1
Year of 2018				
9	Food Poisoning	Antalya	30	-
10	Food Poisoning	Gaziantep	44	-
11	Food Poisoning	Gaziantep	70	-
12	Food Poisoning	Manisa	21	-
13	Food Poisoning	Denizli	62	-
14	Food Poisoning	Antalya	100	-
Total			327	-
Year of 2019				
15	Food Poisoning	Sakarya	143	-
16	Food Poisoning	Kütahya	74	-
17	Food Poisoning	Tekirdağ	42	-
Total			259	-
General			1498	1

years showing the location of food poisoning in military units between 2017-2019, the number of injured and martyrs.

As can be seen, food poisoning is experienced seriously in military units and many injured and martyrs can be given. As a result of the research, it was revealed from 400 news that a total of 17 military units had food poisoning cases and 1499 military personnel were affected and unfortunately 1 soldier was martyred in these incidents.

Precautions and Recommendations for Food Poisoning in Military

Attention and care should be taken to ensure that the kitchen, cellar, dining hall, food containers, dining tables and other dining hall materials are kept very clean, and the unit commanders should frequently check whether the on-duty and sentry personnel of these areas are performing their duties.

In order to ensure safe food and prevent food-borne illness, hygiene rules must be followed during purchase, storage, preparation, cooking and service. A number of precautions to be taken in terms of kitchen, warehouses, meals and personnel in areas such as military units are as follows:

Precautions to be Taken in Kitchens

- Gas alarm devices should be used in order to detect any leakage occurring in gas-fired devices and installations.
- Places with stoves should be ventilated.
- In the canteens of the Union, the sale of colognes made of methyl alcohol with an unknown company should be prevented.
- Chimneys should be cleaned and maintained once a year.
- It should be preferred that all the materials used in the kitchen are made of products that can be easily and well cleaned and disinfected.
- Measures should be taken to prevent cat, dog, bird, fly etc. pests and substances that adversely affect health, such as dust, smoke, odor, etc.
- The floor of the places where food is stored should be flat, smooth, without cracks, easy to clean, with sufficient slope to ensure proper cleaning, and be waterproof and not to be slippery from materials such as marble, concrete, mosaic, tiles.
- Kitchen floor must be kept clean and dry at all times.
- In cases where there is no clean water, hand sanitizer should be used. These disinfectants should contain 60% ethyl alcohol. Trainings should be given on the effective use of disinfectants.
- Water stored in open containers (such as barrels, buckets or tanks) is not suitable. Instead of these, closed and tap storage tanks should be used.
- The glasses used by each staff should be separate in kitchens, and disposable kitchenware should be preferred for outdoor tasks.
- All water used for drinking water or human use must be analyzed and documented whether it is suitable for drinking and use in sanitary quality. The personnel should be warned by the signs to be hung in suitable places that water suitable is only for use and non-drinkable.
- Drinking water supplies and water wells should be adequately protected against faecal contamination, insect infestation or anything that could be done intentionally on the purpose of poisoning.
- In terms of personnel health and safety in military units, necessary actions must be taken for general hygiene sanitation.
- Periodic sanitation inspections of food preparation areas (such as kitchen, dining hall, cafeteria, patisserie, teahouse, warehouses) should be carried out at least once a week.
- Floors should be kept as dry as possible. Washing should be done in the cleaning of wet floors and proper drainage should be available for this. Personnel should wear shoes suitable for wet floors. There should be no protrusions, splinters, platforms, loose woods, holes etc. on the floor.
- Considering the number of personnel, sufficient amount of drinking and utility water should be available.

Precautions to be Taken Regarding Food

Changes caused by physical changes, bacteria, molds and enzymes also occur in foods that are not stored properly and as a result, it can lead to food poisoning. For this reason, some measures to be taken are listed below.

- Important points to be considered in storage are; storages should be suitable for the product temperature, clean and at the same time tidy. Food must have an expiration date, Turkish Standards Institute (TSE) and ministry permissions. Foods should not be expired. Rotten, poorly packaged, rusty, open top etc. the product should not be found in the storages. There should be no external substances (personnel clothes, cleaning materials) in the warehouse. The product should not be stored in wooden cases (14).
- Raw fruits and vegetables should be washed well before cooking and serving.
- Foods containing meat, milk and eggs prepared to be cooked should be cooked immediately without waiting at kitchen temperature or stored in refrigerators (3; 15).
- Foods of animal origin such as meat, fish and chicken should be cooked well.
- Foods should be pre-cooled if they are not served immediately.
- Hot meals should be served at temperatures of 70 °C and above, cold dishes at 5 °C and below, with clean equipment. Food should not be kept at these temperatures for longer than 3 hours (3; 15; 16).
- Tools and work surfaces should be cleaned after they are used for the preparation of raw food and should not be allowed to come into contact with cooked food.
- Tools that especially come into contact with potentially risky foods should be washed and disinfected every 4 hours at most, even if they are used continuously during the day, and they should be reassembled and used after drying (15; 16).
- Frozen food (between -17.7 and -23.3 ° C) should be stored frozen until consumption. Raw

vegetables and fruits should be washed in clean drinking water. The holding process of the foods that need to be kept warm should be in a system that can provide at least 62.8 ° C. Food should be kept in hot cabinets, ovens and hot vehicles. Foods kept at room temperature for a long time cause food poisoning. If such applications are paid attention to in food businesses, the factors that impair food hygiene are eliminated. New contaminations can be prevented and existing bacteria can be prevented from multiplying and reaching dangerous numbers (17).

- Food should be stored under suitable conditions according to their types.
- Food should be served immediately after cooking.
- The rusted, swollen, deformed, punctured canned foods in the unions should not be consumed.
- Food (packaged) should be consumed under appropriate storage conditions and by paying attention to the expiry dates.

Precautions to Be Taken Regarding Kitchen Staff

The basic and critical point to ensure hygiene in food production facilities and kitchens is that kitchen personnel act within the framework of sanitation rules. In addition to the sufficient hygiene knowledge of the kitchen staff, it is also important to reflect this knowledge on the attitudes and behaviors of the staff. In obtaining healthy food, training of the personnel working in the enterprises on personal cleaning and hygiene is one of the important stages of the hygiene chain extending to the consumer.

- Personnel in charge of the production, processing and storage of food can infect many pathogenic microorganisms, especially their hands, to foodstuffs and cause food-borne infections and intoxications. For this reason, the personnel should be made aware of hygiene rules and should have effective hand washing habits, especially in accordance with the rules.

- In addition to many external factors such as hair, mustache and accessories, these factors should not be ignored, since each of the personnel's breath, saliva and wounds, if any, may constitute a source of contamination (13).
- The fingernails of the staff should be cut short and there should be no exposed wounds.
- It is important for good personnel hygiene to wear suitable protective clothing such as headgear, mask, cap, gloves and footwear while working. These clothes should be kept clean and easy to clean.
- Personnel working in institutions providing mass nutrition services must undergo health checks twice a year. Persons with contagious diseases or porter persons should not be employed in the service section of the meal (15-18).
- Care should be taken that the personnel in contact with food do not have infectious diseases such as upper respiratory tract disease, skin infection, etc.

Results

Foodborne infections are among the main public health problems in developed and developing countries. Food and Agriculture Organization (FAO) and World Health Organization (WHO), the Expert Committee on Food Safety, show that food-borne diseases caused by contaminated food consumption are the most common health problem on a global basis (3). Nevertheless, it is not only the ignorance of food hygiene that leads to food poisoning, but also not applying the acquired knowledge correctly (19).

Dozens of people are exposed to work accidents, get incapacity reports or pass away from food-borne food poisoning in workplaces where mass catering service is provided every day. In addition to material damages such as temporary workforce losses and productivity losses due to food poisoning in the workplace, the trust in the business and management among employees is also damaged. Military units are also businesses where food poisoning is common.

Within the scope of this study, the cases of food poisoning in military units between 2016-2019 were

examined. Since it is not possible to reach official military records, the news of food poisoning on internet news sites were subjected to analysis.

As a result of the research, there were no poisoning cases in 2016, while 17 food poisoning cases were experienced in military units in various cities between 2017-2019. In these incidents, a total of 1498 military personnel were injured and 1 soldier was martyred.

These sad events, which are among the workplaces where food poisoning occurred in military units, cause social reactions and damage the institutional reputation of the TSK. In addition, these occupational accidents cause low morale and motivation in terms of military personnel, reduce their performance and cause huge financial losses.

As it is understood, food safety is very important in military units, as in all mass places where food is eaten. The cases of poisoning show that there is not enough attention to food safety in military units. In food production, it is necessary to pay attention to food safety in each of the stages such as transportation, processing, product conversion, packaging, storage, presentation to personnel, starting from raw materials. Especially, food establishments from outside food suppliers and food and cafeteria services should be controlled much more strictly, and only by signing contracts with ISO 22000 certified organizations, food supply should reach a certain standard. It is known that there are companies that produce food under the counter, which are common in our country, and companies should be examined accordingly.

It is important for the health of the personnel that the meals in the dining halls are enjoyed and eaten. On the other hand, the disposal of uneaten food will cause environmental health problems for the continent, the headquarters and the institution, as well as financial losses. For this reason, the preparation, distribution and service of the meals should be followed closely, and necessary precautions should be taken to prepare delicious and serve them hygienically.

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