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# KNOWLEDGE, ATTITUDES AND PRACTICE OF WORKERS IN THE PROCESS OF STORAGE AND SALE OF FOOD PRODUCTS IN SHOPPING CENTERS

# ZNANJE, STAVOVI I PRAKSA RADNIKA U PROCESU SKLADIŠTENJA I PRODAJE PREHRAMBENIH PROIZVODA U TRGOVAČKIM CENTRIMA

Zerina Čizmo*
Amer Ovčina**
Emilija Hrapović***

## ABSTRACT

Due to increased production and fierce competition on the market, employees in the food industry have an additional obligation to produce those products that meet the needs and wishes of consumers in terms of composition, appearance, quality, safety and price. The goal of establishing quality in shopping centers that sell food items is to ensure all conditions that meet consumer and worker protection standards. Developing countries are expected to meet all criteria in the short term when it comes to the safety and quality of food processing, storage and sale.

This research is descriptive. The methods of induction, deduction and compilation were used. An original questionnaire was used for the research, created on the basis of a review of professional and scientific literature, and experiences based on practice. The research was conducted in shopping centers of the Central Bosnian Canton on a sample of 113 respondents who work in the chain of storage and sale of food items. The research was conducted in the period from June 1 to August 1, 2020. The majority of respondents, 73.5% of them, believe that they know the food management process well. When it comes to protective equipment at work, 52.2% of respondents use it fully. More than half of the respondents, 59.5% of them, state that expired food products are disposed of in the standard municipal waste. The majority of respondents to whom the customer returned an inadequate product offered an adequate replacement or return of the item with a refund. The study confirms the assumption that employees in the food departments of shopping centers have good knowledge, a positive attitude and good practice in the process of storing and selling food.

**Keywords:** food safety, storage and sale, knowledge, attitudes, practice

* Mr. sc. Zerina Čizmo, Clinical center of the University of Sarajevo, e-mail: zerinacizmo@gmail.com
** Doc. dr. sc. Amer Ovčina; Clinical center of the University of Sarajevo; University "VITEZ", e-mail: amerovcina@yahoo.com
*** Mr.sc. Emilija Hrapović, University "VITEZ", e-mail:emilija.hrapovic@unvi.edu.ba

## SAŽETAK

Zbog povećanja proizvodnje i žestoke konkurencije na tržištu, zaposleni u prehrambenoj industriji imaju dodatnu obavezu da proizvode one proizvode koji po sastavu, izgledu, kvalitetu, sigurnosti i cijeni zadovoljavaju potrebe i želje potrošača. Cilj uspostavljanja kvaliteta u tržnim centrima koji prodaju prehrambene artikle je obezbjeđivanje svih uslova koji zadovoljavaju standarde zaštite potrošača i radnika. Od zemalja u razvoju se očekuje da u kratkom roku ispune sve kriterije kada je u pitanju bezbjednost i kvalitet prerade, skladištenja i prodaje hrane.

Ovo istraživanje je deskriptivno. Korištene su metode indukcije, dedukcije i kompilacije. Za istraživanje je korišten originalni upitnik, nastao na osnovu pregleda stručne i naučne literature, te iskustava zasnovanih na praksi. Istraživanje je provedeno u trgovačkim centrima Srednjobosanskog kantona na uzorku od 113 ispitanika koji rade u lancu skladištenja i prodaje prehrambenih artikala. Istraživanje je sprovedeno u periodu od 1. juna do 1. avgusta 2020. godine. Većina ispitanika, njih 73,5% smatra da ima dobro znanje u procesu upravljanja hranom. Kada je u pitanju zaštitna oprema na radu, 52,2% ispitanika je koristi u potpunosti. Više od polovine ispitanih, njih 59,5% navodi da se prehrambeni proizvodi kojima je istekao rok trajanja odlažu u standardni komunalni otpad. Većina ispitanika kojima je kupac vratio neadekvatan proizvod nudi adekvatnu zamjenu ili povrat artikla uz povrat novca. Studija potvrđuje pretpostavku da zaposleni u prehrambenim odjelima trgovačkih centara posjeduju dobro znanje, pozitivan stav i dobru praksu u procesu skladištenja i prodaje hrane.



**Ključne riječi:** bezbjednost hrane, skladištenje i prodaja, znanje, stavovi, praksa


## INTRODUCTION

The food industry needs to produce those products that will meet the needs and desires of consumers in terms of composition, appearance, quality, safety, and price. Studies have shown that population health is not improving, despite the significant progress of modern medicine. One of the causes of this phenomenon is the unfavorable composition of food (Mirić and Šobajić, 2002 ). Effective implementation of good hygiene practices of the developed food safety system in facilities, will provide consumers with a guarantee of safety for food placed on the market and guarantee that consumers will not harm their health if prepared by its purpose (Grujić et al., 2001)

Rational placement of goods in warehouses depends on many factors: the nature of the goods, available storage space, the degree of automation, the degree of turnover of storage and warehousing of goods, level of education, skills, and experience of employees. The food storage area should be designed and arranged in such a way to enable efficient cleaning and maintenance. The person responsible for the food safety and hygiene management procedures must undergo training before starting work based on HACCP principles. (Hrvatska agencija za hranu, 2016). Also, they must undergo a sanitary inspection before starting work. Employees in food departments are forbidden to come to work if they suffer from a contagious disease that can be transmitted through food such as working with

wounds, scratches, purulent pimples, ulcers on the skin of the hands, or other exposed parts of the body. They are also forbidden to come to work if they have diarrhoea or other digestive problems.

Regular maintenance of hygienic habits is a necessary precondition for preventing the spread of infectious diseases. Hygiene habits include procedures performed to maintain personal hygiene, and they need to be performed daily and correctly (Capak and Vuljanić, 2019).

Foodborne diseases caused by microorganisms represent a significant public health problem. Foodborne diseases morbidity and mortality can be reduced by applying appropriate public health procedures (Mačkič and Ahmetović, 2012) Food storage at low temperatures leads to 44% of poisoning. The length of food storage until the moment of use is responsible for 23% of poisoning cases. Contamination due to inadequate and unhygienic handling of food is responsible for 18% of poisoning cases. Ingestion of raw contaminated food is responsible for 16% of poisoning cases. The World Health Organization pointed out the importance of pathogens in food because it has been shown that this form of contamination is on the rise in all countries (Tosović, 2019).

Controlling food stocks is an important part of maintaining food safety. Proper planning is needed to avoid creating excessive amounts of food. The procurement plan includes following planning the required quantities of food, educating staff to determine the adequate amount, securing suppliers to deliver required food on time, controlling stocks of stored food, and removing expired food selling. To monitor the expiration date, it is necessary to mark dates on all foods that are not marked and rotate them according to the principle "First warehouse first put on sale", and regularly check food stocks. Effective and economical inventory and warehouse management is an essential component of any manufacturing company. (Tomac, 2017)

Some of the optional quality management systems are Total Quality Management (TQM), ISO 9001, Food safety management system, ISO 22000, World Class Manufacturing (WCM), Quality Assurance Control Points (QACP), International Food Standard (IFS), Global Standard Food (BRC) and others (Bilska and Kowalski, 2014). The best-known and most widely used international standards are ISO standards that are closely focused on a particular product, material, or process, except standards that define the quality management system. The ISO organization adopts appropriate standards, but this organization does not carry out certification or conformity assessment (Jašić, 2007). The HACCP system is internationally recognized as an effective means of ensuring food safety. The application of HACCP at all stages of the food chain is required worldwide. It is also consumer demand (Anon, 2014).

The halal standard arose from the original intention to provide Muslims with halal food. However, today's trends have shown that the market has recognized halal food as a premium quality guarantee (Anon, 2014). IFS is a standard of quality and food safety in one. It is developed to test food competence in terms of food safety and quality, saving both time and money. The goal of the IFS standard is to create a consistent evaluation system for all companies that supply food retailers. This primarily applies to the brands of large retail chains.

BRC - Provides consumers with safe food. The basic requirements of this standard are the acceptance and implementation of the HACCP system, a documented and effective system of management and control of products, processes, and human resources (Semić, 2018). The basis in the implementation of the management system in the production of safe food is risk analysis, which is a mandatory segment of the latest food legislation. Food safety, and related risk analysis, are the responsibility of several ministries: the Ministry of Health, the Ministry of Agriculture and Forestry, the Ministry of Industry, and the State Administration Bodies (State Institute for Standardization and Metrology).

In Bosnia and Herzegovina, there are various regulations, principles, and laws related to food and food safety. The Food Law regulates the basis for ensuring a high level of protection of human health and consumer interests related to food, taking into account, in particular, the diversity of food supply, including traditional products, while ensuring the efficient functioning of the internal market. Unique principles and competencies, preconditions for achieving a scientific basis, effective organizational structure, and procedures that will be the basis for decision-making in matters of health and food quality are established. (Službeni glasnik). The paper aims to examine the knowledge, attitudes, and practice of employees in food centers when it comes to product storage and to show the most common difficulties encountered in everyday work.

## 1. METHODS

The study used methods of inductions, deductions, and compilations. It is concluded that there are no standardized questionnaires therefore an original study questionnaire is created based on a review of professional and scientific literature, and practical experience. The study was conducted on a sample of 113 respondents. The anonymity of the respondents was fully guaranteed, and the identity of the respondents could not be determined from the answers received. Respondents answered multiple choice answers and open questions. The study was conducted from July 1st to August 1st, 2020. SPSS 23.0 and Microsoft Excel 13 were used for statistical data analyses.

## 2. RESULTS AND DISCUSSION

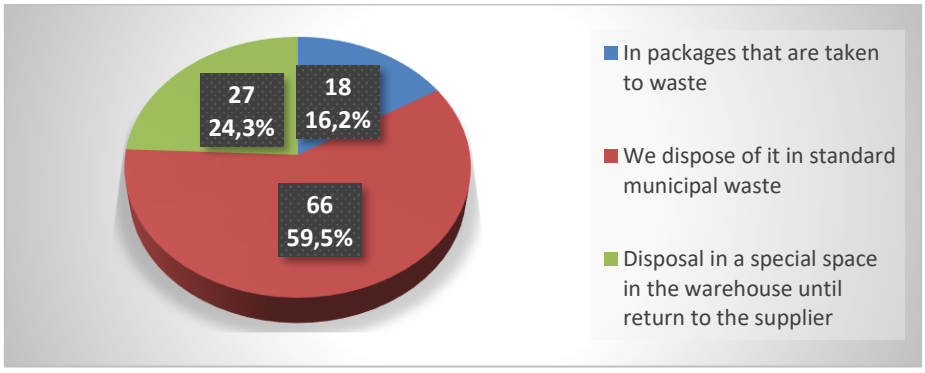
The research was conducted in domestic shopping centers in the Central Bosnia Canton on 113 respondents. Since there is no standardized questionnaire for this type of research, the original author's questionnaire was conducted based on a review of professional and scientific literature and practical experience. The survey was anonymous. Respondents who participated in this research worked daily in the process of food sales and storage.

Table 1. Sociodemographic characteristics of respondents

| Variable | | N | % |
|---|---|---|---|
| Gender | Male | 44 | 38.9 |
| | Female | 69 | 61.1 |
| Age | 18-34 years | 38 | 33.6 |
| | 35-54 years | 61 | 54.0 |
| | Over 54 years | 14 | 12.4 |
| Education | High school education | 105 | 92. 9 |
| | Higher education | 2 | 1.8 |
| | University degree | 6 | 5.3 |
| Work experience | 0-5 years | 38 | 33.6 |
| | 5-10 years | 35 | 31.0 |
| | 11-20 years | 36 | 31.9 |
| | 21-30 years | 4 | 3.5 |

Most of the respondents who work in food sales centers were middle-aged. According to obtained results, food sales centers employ more females than males. Based on study, 61.1% of respondents were female while 38.9% of respondents were male. 92.9% of respondents had a high school while others had higher education or university degree. When it comes to the length of work in the center, it is evident that 33,3 % of respondents had 0-5 years of service, followed by respondents with 11-20 years of service 31.9%, respondents with 5- 10 years of work experience 31.0% and the respondents with 21-30 years of work experience 3.5%.

Figure 1. Disposal of expired food products




Disposal of expired food products is a frequent problem since there is a lack of a specific way of disposal. 59.5% of respondents state that expired food products are disposed of in the standard municipal waste.

This result does not reflect the knowledge and attitudes of respondents, but the policy of the shopping centers where they work. Respondents expressed good awareness of the storage methods of food products they work with. Based on the results, there is an impact of both education and work experience on knowledge of storage practice.

Table 2. Impact of work experience (positive answers)

| Questions | | How many years have you been working in the food department | | |
|---|---|---|---|---|
| | | 0-5 years | 5-10 years | 11-20 years |
| Do you know all the food products in your department? | N | 37 | 27 | 19 |
| | % | 61.7 | 84.4 | 90.5 |
| Are you familiar with the method of storing food products? | N | 37 | 23 | 18 |
| | % | 61.7 | 71.9 | 85.7 |
| Do you use protective equipment when working? | N | 27 | 18 | 14 |
| | | 45.0 | 56.3 | 66.7 |
| How do you handle products with a short shelf life? (Return to supplier) | N | 0 | 1 | 1 |
| | % | 0.0 | 3.1 | 4.8 |
| Do you know any risks that can contaminate food products? | N | 26 | 12 | 11 |
| | % | 43.3 | 37.5 | 52.4 |
| Do you have any written Procedures / Instructions available to all food workers? | N | 13 | 5 | 7 |
| | % | 21.7 | 15.6 | 33.3 |
| | N | 19 | 11 | 1 |
| | % | 31.7 | 34.4 | 4.8 |
| Have you ever noticed in your practice the inadequacy of the item sold and neglected the same, just to sell it? (Sometimes, rare) | N | 19 | 11 | 1 |
| | % | 31.7 | 34.4 | 4.8 |

The length of service in the food department has a positive effect on the way short-lived products are handled, knowledge of the risk of contamination and knowledge of the procedure. Respondents with longer service experience are much less likely to neglect product adequacy due to sales. 43.4% of respondents state that they are fully aware of food contamination risks, 50.4% state that they know only some of them while 6.2% state that they do not know the risks of contamination at all. It is noticeable that respondents with longer work experience are more aware of the risk than respondents with less work experience. Impact of education is crucial for many things, including food storage methods, handling short-term products, and contamination risk awareness.

In a report from Croatia (Pešić J., 2019), the knowledge of food handlers about contamination risk is 92%, which is higher than in our research. In all cases, the results are satisfactory, but there is a need for better education about pathogenic bacteria that can cause cross-contamination and infection of food. Most of the respondents know which products to use to remove bacteria from the equipment, know the daily control of cleaning, and proper storage of cleaning agents. All of the above are key factors in achieving clean equipment and food safety. Respondents are the least familiar with knowledge about Listeria monocytogenes

bacteria and the types of its corrective measures. This fact indicates a big problem since this bacterium can be presented in the working environment of all tested facilities due to its specific way of survival. However, given that employees are familiar with how to clean and maintain hygienic conditions of work equipment, food processing facilities, and personal hygiene, it is assumed that despite ignorance of *Listeria monocytogenes bacterium*, food poisoning can be prevented. Based on the obtained results, it is concluded that greater emphasis should be placed on education about pathogenic bacteria and the way food poison occurs (Pešić, 2019).

Vitko (2019) explains the knowledge of employees in canteens and restaurants about working methods, maintaining hygiene, and work experience. As part of employee training, most respondents underwent food safety training organized by a ministry or other institutions. Most employees perceived communication, the importance of hygiene and food safety, and record-keeping in the facilities employed as satisfactory. In terms of general knowledge, there is a lack of knowledge about bacterial foodborne pathogens, while on the other hand, knowledge of the lack of cross-contamination is satisfactory. Based on the obtained research, there is a visible lack of knowledge about the possibility of poisoning with harmful bacteria and foodborne diseases. The knowledge of employees in the cleaning segment is satisfactory given that most respondents know the rules and regulations of workplace hygiene. On the other hand, most respondents partially or fully agree that some equipment and appliances are difficult to clean. It is also evident that employees are conscious of hygiene importance, food safety, and keeping records.

According to research conducted by Šimić (2019), the Republic of Croatia produces 1,287,927 tons of mixed municipal waste annually, of which approximately a quarter is food waste. Data from the European Commission's FUSIONS46 survey on food waste in 28 EU countries in 2012 are as follows: households - 53%, food processors - 19%, catering - 12%, primary production - 10%, trade sector (wholesale and retail) - 5%.

In the territory of Bosnia and Herzegovina in 2018, 799 cases were reported in which food poisoning was the stated cause. Two epidemics were registered, one Salmonellosis epidemic with 39 patients and one intoxication alimentaris with 17 patients. (Anon, 2018).

According to the World Health Organization, up to 30% of the population suffers from food poisoning in developed countries every year. In developing countries, the morbidity rate is higher, and the mortality rate in those countries is about 3.8 million a year, of which 1.5 million are children. Nowadays, there are over 250 microbiological agents that can lead to food poisoning (Tosović, 2020).

A steady increase in cases of food poisoning has been recorded not only in our country but also in other countries, where the possibilities of sanitary control are more often. This fact can be explained not only by the objective possibilities for the occurrence of mass poisonings due to the rapid development of collective nutrition but also by the fact that the service of recording and diagnosing food poisoning is getting better and better every year (Durmišević and Durmišević-Serdarević, 2008).

Knowledge of the current situation and trends regarding the occurrence and spread of pathogens in the food chain significantly contributes to food safety management. Acquiring this knowledge involves collecting data according to the conditions of monitoring and supervision. For monitoring and surveillance programs, the competent authority should select

sampling procedures and plans depending on the type of microorganism or its toxin and the type of food product. To obtain relevant data, it is recommended that the competent authorities carry out their sampling and microbiological testing activities through well-planned monitoring and control programs.

The EU's goal is to ensure a high level of food security, animal health, animal welfare, and plant health within its borders. Such an approach also ensures the effective functioning of the internal market.

According to Enter Europe (2014), a prerequisite for this approach is the development of legislation and other activities such as:

- ensuring effective system monitoring and assessment of compliance with EU standards in the sectors of food safety and quality, health, animal welfare, and nutrition in the EU and third countries when it comes to their exports to the EU
- managing international relations with third countries and international organizations for food safety, health, animal welfare and nutrition, and plant health.
- establishing relations with the European Food Safety Authority (EFSA) and ensuring risk management (Novaković, Dolenčić Špehar, Havranek, 2014).

In recent decades, the international food trade has developed very rapidly. It contributes to economic progress and has many positive changes in social customs. On the other hand, increased international food trade also facilitates the spread of foodborne illnesses. Therefore, food security is increasingly becoming a global issue (Bijeljac and Toroman, 2008).

All food business entities are responsible for the quality and health of food. Clear rules and guidelines that set necessary standards need to be established. Proper functioning should contribute to preparing the food that consumers and the market demand (Britvec, 2017). The customer is the most important, and everyone in a rational organization must be focused on creating value for the customer or the consumer.

## CONCLUSION

This study confirmed the assumption that employees in the food departments of shopping centers have good knowledge, a positive attitude, and good practice in storing and selling food processes. Also, it has shown that the employees in the food department are adequately educated and know all the work regulations. Half of the respondents are familiar with the risks of food contamination. Most of the respondents check the expiration dates of food products daily. Almost half of the respondents do not use safety equipment at work, which is a worrying fact and provides guidelines for the introduction of mandatory standards in practice. Over half of the employees dispose of expired products in standard municipal waste, and the problem is inadequate organization and lack of adequate prescribed disposal. Most of the respondents did not have some education from the employer, neither external nor internal. The assumption that employees in food departments respect ethical regulations in business has been partially confirmed, given that they know some attitudes and knowledge very well, and some partially.

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