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Research Paper

Food Allergy Knowledge, Attitudes, and Practices among Employees of Food and Beverage Establishments: Evidence from Şanlıurfa

Fatma Beşaltı Ede[1], Serkan Yiğit[1] ✉

[1]*Mardin Artuklu University, Mardin, Türkiye*

Abstract

This study aims to examine the knowledge, attitudes, and behavioral levels of personnel working in food and beverage establishments in Şanlıurfa province regarding food allergies. Food allergies are among the important issues in the food and beverage sector in terms of consumer health, food safety, and service quality. The prevalence of eating and drinking out, especially in tourist destinations, makes the awareness and preparedness level of employees in this area even more crucial. A quantitative research method was adopted in the study, and data were collected between September 15 and September 30, 2024, using a face-to-face survey technique. A total of 409 questionnaires were obtained; after removing incomplete and erroneous forms, analyses were performed on 352 valid questionnaires. The research findings revealed that participants' knowledge and attitudes regarding food allergies were at a moderate level, and they exhibited a moderate level of risk in terms of behavior. The results indicate that personnel working in food and beverage establishments are not adequately prepared regarding food allergies and that more systematic training practices are needed in this area. The study makes significant contributions to improving safe service delivery in food and beverage establishments, increasing employee awareness, and strengthening food safety practices at the destination level.

Keywords: Allergy, Food Allergy, Food and Beverage Establishments, Şanlıurfa

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Author Contributions

Author	Email / ORCID	Cont. %*	Roles (CRediT)
Fatma Beşaltı Ede Master's degree graduate	besaltifatma@gmail.com 0009-0007-4381-8215	60%	Conceptualization, Data Curation, Writing - Original Draft
Serkan Yiğit ✉ Assoc. Prof.	serkanyigit@artuklu.edu.tr 0000-0003-1284-7236	40%	Conceptualization, Methodology, Writing - Review & Editing, Supervision

** While multiple authors may share the same CRediT roles, the contribution percentages indicate the relative magnitude of each author's contribution to those roles and to the manuscript overall.*

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1. Introduction

Food allergy is defined as an abnormal reaction of the immune system to certain foods and is increasingly recognized as a critical issue regarding food safety and consumer health. While it is known that the prevalence of food hypersensitivity is particularly higher in early childhood, it is also noted that it can lead to serious health problems and a reduced quality of life in adults. Although comprehensive and up-to-date data on the prevalence of food allergies in Turkey are limited, existing studies indicate that this issue must be addressed with care from the perspectives of both public health and food service establishments (Ulaş Kadıoğlu, 2017).

Food allergies are taking on a more critical dimension for food and beverage establishments, particularly in today's world where eating out has become widespread. Accurately knowing the ingredients of products served in restaurants, cafes, hotels, and similar establishments, effectively managing allergenic components, and reducing the risk of cross-contamination are of great importance for ensuring that individuals with allergies can safely receive service. In this context, the level of knowledge, attitudes, and practices regarding food allergies among staff working in food and beverage establishments can have a direct impact on consumer safety. Given that food consumed in restaurants can be associated with allergic reactions, it can be said that the awareness and behavior of employees involved in the service process play a decisive role (Soon, 2020).

Research in the literature indicates that the knowledge of food service workers regarding food allergies is often insufficient. A study conducted in Erzurum found that only a limited proportion of staff working in food and beverage establishments could correctly identify common allergens, and very few had received training on this subject (Söğüt et al., 2015). Similarly, it is emphasized that the knowledge gaps observed in the sector must be addressed through training; it is important to support employees not only in terms of hygiene but also in the areas of knowledge, attitudes, and behaviors related to food safety (Şanlıer et al., 2020).

With the development of gastronomy and tourism activities, food and beverages have evolved beyond merely fulfilling nutritional needs; they have become key components that reflect a destination's cultural identity, local values, and tourist appeal. Gastronomic festivals, regional products, culinary routes, and local culinary experiences are considered among the factors that enhance the competitive strength of tourism destinations (Özbay et al., 2023). For this reason, providing a safe dining experience in destinations with gastronomic appeal is important not only in terms of individual business performance but also in terms of destination image and visitor satisfaction.

Şanlıurfa is one of the cities that stands out in this regard due to its strong gastronomic heritage, local culinary culture, and tourist appeal. However, it is observed that studies on food allergy management and staff awareness are limited in destinations with high gastronomic potential. In particular, examining the knowledge, attitudes, and behaviors of staff working in food and beverage establishments operating in the Southeastern Anatolia Region regarding food allergies constitutes an important area of research from both an academic and industry perspective. Accordingly, the aim of this study is to examine the knowledge levels, attitudes, and behaviors regarding food allergies among staff working in food and beverage establishments in Şanlıurfa. The study is expected to contribute to raising awareness of food allergies, developing safer service processes in establishments, and making the importance of this issue more visible in the tourism sector.

2. Literature Review

Food allergy is defined as adverse reactions developed by the immune system in response to proteins in certain foods and can lead to clinical presentations ranging from mild symptoms to life-threatening anaphylactic reactions. The increase in the prevalence of food allergies observed in recent years necessitates addressing the issue not only as a medical problem but also from the perspectives of food safety, consumer health, and service processes. Although food allergies are more common in childhood, they can also cause health problems and a decline in quality of life in adults (Ulaş Kadıoğlu, 2017; Tercanlı & Atasever, 2021; Saygı, 2022).

Although comprehensive data on the prevalence of food allergies and food intolerances in Turkey are limited, existing studies indicate that the issue has reached a level that warrants attention from a public health perspective. Ulaş Kadıoğlu (2017) notes in his study that the lifetime prevalence of food allergies and food intolerances is significant. These findings highlight the growing importance of ingredient management, allergen labeling, and safe service practices for products offered by food and beverage establishments, particularly in today's environment where out-of-home consumption is on the rise.

For individuals with food allergies, dining out can involve various uncertainties and risks. Insufficiently clear menu descriptions at restaurants, the hidden presence of allergenic ingredients, the risk of cross-contamination, and staff members' lack of knowledge on the subject can cause anxiety among consumers. Schiefert and Matteucci (2018) note that tourists with food intolerances may encounter issues such as distrust of labeling and restaurant staff, uncertainty, a sense of being a burden to others, and a lack of empathy during their dining-out experiences. Similarly, Barnett et al. (2018) reveal that consumers with food allergies or intolerances face various challenges in accessing allergen

information and obtaining reliable information while dining out. In this regard, food allergies are considered an issue that extends beyond individual health; it is linked to consumer behavior, service quality, customer trust, and the overall tourist experience.

Managing food allergies in food and beverage establishments is not limited to controlling the raw ingredients used in the kitchen. Key components of this process include menu planning, recipe standardization, the accuracy of ingredient information, preventing cross-contamination during preparation and service, ensuring service staff can provide accurate information to customers, and maintaining effective communication between the kitchen and service staff. Therefore, restaurant staff's level of knowledge, attitude, and behavior regarding food allergies directly determine the provision of safe service. Soon (2020) notes that food allergy training in food service is often inadequate and that more comprehensive training programs are needed in this area.

Studies in the literature indicate that the knowledge and awareness levels of restaurant and food service workers regarding food allergies are not at the desired level. A study conducted on restaurant staff in Turkey found that only a limited proportion of employees could identify basic food allergens and that very few had received training on the subject (Söğüt et al., 2015). Similarly, international studies examining restaurant employees' knowledge and attitudes toward food allergies have revealed that staff may have gaps in their understanding of allergens, symptoms, and safe service practices (Radke et al., 2016; Loerbroks et al., 2019). These findings indicate that allergen management should not be left to employees' individual experience but must be supported by standard procedures, regular training, and managerial oversight.

Employees' levels of knowledge, attitudes, and behaviors may vary depending on the type of establishment, educational background, work environment, and organizational practices. A study conducted on food handlers working in five-star hotel kitchens found that levels of knowledge, attitudes, and practices regarding food allergies can be influenced by various demographic and occupational variables (Lokman & Akoğlu, 2022). In a study conducted in Malaysia, it was determined that employees' behavior scores indicated a moderate level of risk (Shafie & Azman, 2015). These findings demonstrate the importance of conducting studies in different destinations and across various types of establishments to evaluate allergen management within local contexts.

In the food safety literature, employee training is recognized as one of the fundamental elements of safe production and service processes. Individuals working in food and beverage establishments must be knowledgeable not only about general hygiene rules but also about allergen management, which is a specific aspect of food safety. Şanlıer et al. (2020) demonstrate that food safety training provided to individuals working in food and beverage departments has an impact on their knowledge, attitudes, and behaviors. For this reason, food allergy awareness should be addressed as a specific and critical component of the overall food safety culture.

One of the factors complicating food allergy management is that common allergens can be present—either overtly or as hidden ingredients—in a large number of menu items. Milk, eggs, peanuts, tree nuts, soy, wheat, fish, and shellfish are among the most commonly encountered allergens (Tercanlı & Atasever, 2021). However, from the perspective of food and beverage establishments, the risk is not limited to these allergens being explicitly listed on the menu. Spice blends, nuts, sauces, oils, pastes, ready-made mixes, and garnishes used in recipes can also pose hidden risks for consumers with allergies. This situation makes it even more critical to convey ingredient information accurately, in detail, and in a way that is understandable to consumers, particularly in destinations where local culinary products are prominently featured.

From the perspectives of gastronomy and tourism, food and beverages are among the key elements of a destination's identity and tourist appeal. Gastronomic experiences can influence how visitors perceive a destination, their satisfaction levels, and their intention to return. Kivela and Crotts (2006) note that gastronomy is a key factor shaping tourists' destination experiences. While Henderson (2009) emphasizes the importance of food tourism in terms of destination promotion and tourism product development, Ellis et al. (2018) demonstrate that the concept of gastronomic tourism is a multidimensional field related to culture, local identity, authenticity, destination management, and experience creation. Studies conducted specifically on Şanlıurfa also show that gastronomic tourism contributes to a destination's appeal (Sevimli et al., 2021; Özbay et al., 2023; Akturfan et al., 2024).

Local cuisine should not be viewed merely as an element of attraction in tourism. Cohen and Avieli (2004) note that food can serve as both an attraction and a barrier in the tourism experience. This perspective becomes even more significant for tourists with food allergies. This is because, for individuals with allergies, the uniqueness and diversity of local dishes can turn into a source of uncertainty that poses a health risk if adequate ingredient information is not provided. Consequently, food and beverage services offered in destinations renowned for their gastronomy are expected to be adequate not only in terms of taste, authenticity, and cultural representation but also in terms of safety, accessibility, and the quality of informative services. In this regard, food allergies can be linked to the problem of asymmetric information in gastronomic destinations.

Asymmetric information refers to situations where the service provider possesses more information about the product or service than the consumer (Akerlof, 1970). In a restaurant setting, consumers with allergies often cannot directly know

the ingredients of a dish, the oils used, spice blends, sauces, cooking equipment, or the risk of cross-contamination. This information depends largely on the establishment's menu descriptions, statements made by service staff, and the practices of kitchen staff. If an establishment's staff member does not know this information correctly, cannot convey it, or does not take it seriously, the health risk to the consumer increases. For this reason, the experience of dining out for individuals with food allergies transcends being merely a matter of personal preference or taste and transforms into a service relationship based on trust.

Şanlıurfa cuisine possesses a strong gastronomic identity characterized by a rich variety of regional dishes, the use of spices, meat-heavy dishes, sauce-based preparation techniques, the use of clarified butter, grain-based products, and desserts that may contain nuts. Ercan et al. (2023) examined the extent to which regional dishes from Şanlıurfa's culinary culture are featured on the menus of food and beverage establishments and highlighted the importance of local culinary products for the destination's gastronomic identity. Akturfan et al. (2024), on the other hand, assessed Şanlıurfa's gastronomic tourism potential and emphasized the importance of promoting and marketing local gastronomic products, as well as the processes involved in shaping a gastronomic identity. While this gastronomic richness enhances the destination's tourist appeal, it can also increase ingredient uncertainty for consumers with allergies. In particular, the preparation of regional dishes based on masterful culinary expertise, variations in recipes from one establishment to another, and the absence of detailed allergen information on menus can create a chronic information asymmetry problem for individuals with food allergies who dine out.

In destinations with high gastronomic potential, such as Şanlıurfa, food allergy management should not be viewed solely as an internal food safety practice. Providing accurate ingredient information to consumers with allergies, reducing the risk of cross-contamination, and raising staff awareness of allergens will not only minimize individual health risks but also contribute to the destination's ability to offer an inclusive, reliable, and professional gastronomic experience. A safe dining experience should be viewed as a strategic component of service quality that can be linked to visitor satisfaction, destination image, and the intention to return in gastronomic destinations.

Şanlıurfa is one of Turkey's major gastronomic destinations, thanks to its rich gastronomic heritage, local culinary culture, and tourist appeal. However, there appears to be a limited number of studies that comprehensively examine the knowledge, attitudes, and behaviors regarding food allergies among staff working in food and beverage establishments operating in destinations with high gastronomic potential. This gap points to an important area of research that should be evaluated in the context of both food safety and culinary tourism. Accordingly, the aim of this study is to examine the knowledge levels, attitudes, and behaviors regarding food allergies among staff working in food and beverage establishments operating in Şanlıurfa. The study is expected to contribute to raising awareness of food allergies, developing safer service processes in establishments, and supporting inclusive dining experiences in gastronomic destinations.

3. Method

In this study, a quantitative research approach was adopted to determine the levels of knowledge, attitudes, and behaviors regarding food allergies among staff working in tourism-oriented hotels and food and beverage establishments operating in Şanlıurfa. The study was designed as a survey. The survey model is a research approach that allows for the identification of the current status of individuals' views, attitudes, knowledge, behaviors, and similar characteristics regarding a specific topic (Büyüköztürk et al., 2016).

Sample

The population of the study consists of staff working in hotels and food and beverage establishments operating within the borders of Şanlıurfa Province. The study focused specifically on establishments located in areas with high tourist traffic, serving both local and foreign visitors, preferred by tour operators, and distinguished for their gastronomic experiences. In this context, hotel establishments and independent food and beverage businesses operating near tourist attractions—particularly around Balıklıgöl Square—were included in the study.

The study employed a combination of non-probability sampling methods: purposive sampling and convenience sampling. Purposive sampling was used to select the businesses. Accordingly, businesses operating in areas of Şanlıurfa with high tourist traffic, serving both local and foreign visitors, and having high visibility in terms of gastronomic experiences were included in the study. Convenience sampling was used to reach participants. Due to variations in the number of employees at the establishments, the inability to determine the exact total number of employees in the entire population, and the need to conduct the data collection process in accordance with the establishments' operating schedules, the surveys were administered to volunteer employees who agreed to participate in the study. A total of 409 surveys were administered during the data collection process. As a result of data verification, 57 questionnaires identified as incomplete, incorrect, or inconsistent were excluded from the analysis. Thus, the analyses were conducted based on 352 valid questionnaires.

Data Collection Tool and Process

A survey form was used as the data collection tool in the study. In addition to questions designed to determine participants' demographic characteristics, the survey form included items aimed at measuring their knowledge, attitudes, and behaviors regarding food allergies. Participants' demographic characteristics- such as gender, age, educational status, job role within the establishment, length of professional experience, and type of establishment where they work were determined. Previous studies on the subject were utilized in the preparation of the questionnaire (Kılınç, 2022; Lokman & Akoğlu, 2022).

Prior to the start of the study, ethical approval was obtained from the Scientific Research and Publication Board of Mardin Artuklu University on September 12, 2024, under number 161123. Data were collected between September 15 and September 30, 2024, using face-to-face interviews. Prior to administering the survey, participants were informed about the purpose and scope of the study and how the data would be used; it was explained that the collected data would be used solely for scientific purposes. Participation was voluntary.

Analysis

Following the data collection process, the survey forms were reviewed; forms identified as incomplete, incorrect, or inconsistent were excluded from the analysis. The 352 valid surveys were entered into a computer system, and the data were analyzed using statistical software. A reliability analysis was conducted to assess the internal consistency of the measurement instruments, and Cronbach's alpha coefficients were calculated. The analysis revealed that the Cronbach's alpha coefficient for the Food Allergy Knowledge Scale was 0.88; for the Food Allergy Attitude Scale, it was 0.84; and for the Food Allergy Behavior Scale, it was 0.91. These values indicate that the scales used in the study are highly reliable. The dataset was examined for missing values and outliers prior to analysis; no missing values were detected. Items requiring reverse coding were appropriately recoded before analysis. Frequency, percentage, arithmetic mean, and standard deviation were used in the data analysis.

Limitations of the Study

The study is limited to staff working at hotels and food and beverage establishments operating within the borders of Şanlıurfa Province and in areas with high tourism activity. The selection of establishments focused specifically on those located near tourist attractions and with high visibility in terms of gastronomic experiences, which limits the generalizability of the findings to all food and beverage establishments in Şanlıurfa or to different destinations. Additionally, the fact that participants were selected using convenience sampling is a limitation that must be considered regarding the study's representativeness. However, differences may exist between hotel establishments and independent food and beverage establishments in terms of corporate oversight, standard procedures, kitchen organization, equipment use, and in-service training opportunities. These differences have the potential to influence employees' behavioral levels regarding food allergies. Therefore, conducting comparative analyses between hotel establishments and independent restaurants in future studies could reveal in greater detail how food allergy management varies by business type.

4. Findings

In the study, participants' levels of knowledge, attitudes, and behaviors regarding food allergies were assessed across three separate dimensions. According to the analysis results, participants scored an average of 11.04 ± 2.04 out of 17 on the knowledge dimension; an average of 45.8 ± 3.90 out of 75 on the attitude dimension; and an average of 49 ± 4.22 out of 65 on the behavior dimension. When the percentage scores were examined, the knowledge level was calculated as 65%, the attitude level as 61%, and the behavior level as 75%. Accordingly, the knowledge and attitude levels were assessed as moderate, while the behavior dimension was assessed as moderately risky.

Demographic Information of Participants

Findings regarding the participants' demographic characteristics are presented in Table 1. According to Table 1, 64.3% of the study participants were male, and 35.7% were female. When the age distribution is examined, the highest proportion, at 31.8%, is found in the 18–24 age group. This is followed by the 25–34 age group at 28.7% and the 35–45 age group, also at 28.7%. 10.8% of the participants are 46 years of age or older.

In terms of educational background, it was determined that the majority of participants were high school graduates (47.6%). The percentage of elementary/middle school graduates was 25.2%, associate's degree graduates 14.3%, bachelor's degree graduates 9.7%, and graduate degree graduates 3.2%. When the distribution of roles within the establishment was examined, the highest proportion was found among waitstaff (22.7%). This was followed by cooks (16.8%), interns (11.6%), head waitstaff (11.1%), and busboys (11.1%). In terms of professional experience, it was determined that 40.5% of participants had 0–5 years of experience, 29.9% had 6–10 years, 18.2% had 11–15 years, and 11.4% had 16 years or more of experience.

Table 1. Findings Regarding Participants' Demographic Information

Variables	f	%
Gender		
Female	126	35.7
Male	226	64.3
Age		
18–24	112	31.8
25–34	101	28.7
35–45	101	28.7
46 and above	38	10.8
Educational status		
Elementary and Middle School	91	25.2
High School	166	47.6
Associate's Degree	50	14.3
Bachelor's Degree	34	9.7
Graduate	11	3.2
Position in the company		
Restaurant Manager	27	7.7
Assistant Restaurant Manager	17	4.8
Head Waiter	39	11.1
Waiter	80	22.7
Head Chef	30	8.5
Assistant Head Chef	20	5.7
Cook	59	16.8
Waiter	39	11.1
Intern	41	11.6
Length of professional experience		
0–5 years	143	40.5
6–10 years	105	29.9
11–15 years	64	18.2
16 years and older	40	11.4

Source: Authors' own elaboration

In terms of educational background, it was determined that the majority of participants were high school graduates (47.6%). The percentage of elementary/middle school graduates was 25.2%, associate's degree graduates 14.3%, bachelor's degree graduates 9.7%, and graduate degree graduates 3.2%. When the distribution of roles within the establishment was examined, the highest proportion was found among waitstaff (22.7%). This was followed by cooks (16.8%), interns (11.6%), head waitstaff (11.1%), and busboys (11.1%). In terms of professional experience, it was determined that 40.5% of participants had 0–5 years of experience, 29.9% had 6–10 years, 18.2% had 11–15 years, and 11.4% had 16 years or more of experience.

Participants' Levels of Training on Food Allergies

Findings regarding participants' status of education on food allergies and their experiences with food allergy cases are presented in Table 2. According to the findings, 38.6% of participants reported having received education on food allergies, while 61.4% reported not having received any education on the subject. Among participants who had received education, the highest proportion had received on-the-job training (43.4%). This was followed by participants who had received education through university (21.3%), high school (20.6%), and courses (14.7%). Additionally, 25% of participants stated that they had previously encountered a case involving food allergies, while 75% reported that they had not had such an experience.

Table 2. Findings Regarding Participants' Levels of Education on Food Allergies

Variables	f	%
Status of Education on Food Allergies		
Yes	136	38.6
No	216	61.4
Institution where education on food allergies was received		
Course	20	14.7
High school	28	20.6
College	29	21.3
In-service training	59	43.4
Encountering a case involving a food allergy		
Yes	88	25
No	264	75

Source: Authors' own elaboration

Findings Regarding the Level of Knowledge About Food Allergies

Findings regarding participants' knowledge levels about food allergies are presented in Table 3. According to the data, 92% of participants correctly answered the statement: "A food allergy is an hypersensitivity reaction triggered by the immune system in response to a specific food." The percentage of participants who correctly answered the statement "Food allergies can negatively affect human health and may pose a serious, life-threatening risk for some people" was determined to be 91.2%. Additionally, 85.6% of participants correctly stated that all stages—from raw materials to the customer—must be under control to prevent allergen contamination.

Table 3. Findings Regarding Participants' Levels of Knowledge About Food Allergies

Knowledge Statements	Correct	
	(f)	%
A food allergy is an excessive sensitivity reaction triggered by the immune system in response to a specific food.	324	92
Food allergies can negatively affect human health and may pose a serious, life-threatening risk for some people.	321	91.2
Among nutrients, the substances that cause allergies are generally proteins.	244	69.3
To prevent the presence of allergens in foods due to unintended causes, all stages—from raw materials to the customer—must be kept under control.	301	85.6
Food allergies can be serious but are not common.	255	72.4
Food allergies and intolerances cause similar reactions. *	114	32.4
When an allergenic food is consumed, an allergic reaction occurs within 2 to 12 hours.	272	77.3
Spices are among the most allergenic foods. *	126	35.8
People with food allergies can experience an allergic reaction even if they consume only a very small amount of the allergenic food.	164	46.6
Cow's milk is the most significant and most common allergenic food, especially in children.	209	59.4
Fish and seafood are allergenic foods in both adults and children.	288	81.8
Allergic reactions can occur at the site of contact with the food—such as the lips or inside the mouth—or throughout the entire body.	229	65.1
Lactose intolerance and milk allergy are caused by the same type of allergens. *	158	44.9
Food allergies do not result in death. *	247	70.2
Cross-contamination occurs when equipment or utensils that have come into contact with allergenic foods come into contact with non-allergenic foods during food processing.	256	72.7
A child's risk of developing allergies increases if one or both parents have allergies.	203	57.7
Heating food reduces or eliminates allergic reactions.	174	49.4
Total Information Score	352	65

**=Reversely coded statement*
Source: Authors' own elaboration

It was observed that the correct response rates were lower for some items in the study. The correct response rate was 32.4% for the statement "Food allergies and intolerances cause similar reactions"; 35.8% for the statement "Spices are among the most allergenic foods"; "People with food allergies can experience an allergic reaction even if they consume only a very small amount of the allergenic food" was 46.6%; and "Heating food reduces or eliminates the allergic effect" was 49.4%. The total knowledge score was determined to be 65%. When examining the findings regarding the recognition of common allergenic foods , it was observed that 82.4% of participants identified eggs, 72.2% identified fish, 71.9% identified soy, 69.9% identified wheat, and 68.5% identified shellfish as common allergenic foods. The percentage of participants who correctly identified tree nuts as a common allergen was 60.2%.

Findings Regarding Attitudes Toward Food Allergies

Findings regarding participants' attitude levels toward food allergies are presented in Table 4. The total attitude score was calculated as 45.8 ± 3.90 out of 75 points, corresponding to 61%. One of the highest averages among the attitude statements was obtained for the statement "I believe that meals prepared in the kitchen are safe in terms of food allergies." The mean for this item was 3.89, with a score of 74.4%. The mean for the statement "People working at any stage of production should be knowledgeable about allergens and their effects on humans" was 3.83, with a score of 69.3%.

Table 4. Findings Regarding Participants' Attitude Levels Toward Food Allergies

Attitude Statements	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Average	Standard Deviation	Score (%)
Food allergies are an important part of my work.	62 (17.6)	8 (2.3)	69 (19.6)	102 (29)	111 (31.5)	3.54	1.39	60.5

I believe that if employees are careful about food allergens, they can prevent food allergies.	25 (7.1)	39 (11.1)	75 (21.3)	112 (31.8)	101 (28.7)	3.63	1.2	60.5
I would like to participate in a food allergy education program to learn more about food allergies.	27 (7.7)	31 (8.8)	93 (26.4)	110 (31.2)	91 (25.6)	3.62	1.14	56.8
I do not believe that sufficient information on allergens is provided in programs related to this field (gastronomy, culinary arts, etc.).	26 (7.4)	52 (14.8)	93 (26.4)	111 (31.5)	70 (19.9)	3.43	1.15	51.4
Individuals working at any stage of production should be knowledgeable about allergens and their effects on humans.	23 (6.5)	29 (8.2)	96 (15.9)	131 (37.2)	113 (32.1)	3.83	1.15	69.3
I believe that the meals prepared in the kitchen are safe in terms of food allergies.	26 (7.4)	21 (6.0)	43 (12.2)	141 (40)	121 (34.4)	3.89	1.14	74.4
I believe I can effectively handle a food allergy emergency in the kitchen.	24 (6.8)	34 (9.7)	88 (25)	121 (34.4)	85 (24.1)	3.61	1.13	58.5
I think managers should regularly educate employees about food allergies.	31 (8.9)	54 (15.3)	96 (27.3)	113 (32.1)	58 (16.5)	3.5	2.9	48.6
I believe that when allergens are used in foods, information about these allergens should be included on the food label.	24 (6.8)	28 (7.9)	59 (16.8)	145 (41.2)	96 (27.3)	3.76	1.13	68.5
I believe that knowledge about food allergies will benefit not only my work but also my personal life.	29 (8.2)	28 (7.9)	60 (17)	128 (36.4)	107 (30.4)	3.87	2.45	66.8
I read the label information to check for allergens in the foods I eat.	30 (8.5)	30 (8.5)	59 (16.8)	124 (35.2)	109 (31)	3.76	1.18	66.2
My knowledge of food allergies will give me more confidence when preparing meals at work.	27 (7.7)	33 (9.4)	62 (17.6)	125 (35.5)	104 (29.5)	3.83	2.45	65
I believe appropriate measures can be taken to prevent cross-contamination among foods in the workplace.	27 (7.7)	21 (6)	78 (22.1)	109 (31)	117 (33.2)	3.8	1.15	64.2
I am not required to inform the customer when I use allergenic foods or additives in the product I prepare.	22 (6.3)	28 (7.9)	66 (18.8)	136 (38.6)	100 (28.4)	3.77	1.12	67
In the food industry, research on allergens plays a crucial role in ensuring food safety.	82 (23.3)	64 (18.2)	71 (20.2)	65 (18.4)	70 (19.9)	2.91	1.43	38.3
Total Attitude Score						45.8	3.9	61

Source: Authors' own elaboration

The average score for the statement "I would like to participate in a food allergy education program to learn more about food allergies" was 3.62; the average score for the statement "I believe that food allergies can be prevented if employees are careful about food allergens" was 3.63. The statement "In the food industry, efforts related to allergens play a very

important role in ensuring food safety" had an average of 2.91 and a score of 38.3%, making it one of the statements with the lowest level of agreement.

Findings Regarding Behaviors Related to Food Allergies

Findings regarding participants' behavioral levels related to food allergies are presented in Table 5. The total score for the behavioral dimension was 49 ± 4.22 out of 65, corresponding to 75%. This value indicates that the behavioral dimension is at a moderate-risk level.

Table 5. Findings on Participants' Food Allergy Behavior Levels

Behavioral Statements	Never (%)	Rarely (%)	Occasionally (%)	Usually (%)	Always (%)	Average	Standard Deviation	Score %
Before preparing an allergen-free meal, I wash my hands thoroughly with soap and water and put on a fresh pair of gloves.	32 (9.1)	18 (5.1)	25 (7.1)	107 (30.4)	170 (48.3)	4.05	1.23	78.7
I wear a clean uniform when preparing food.	14 (4)	23 (6.5)	28 (8)	104 (29.5)	183 (52)	4.21	1.05	81.5
I wear a hat or a hairnet when preparing food.	17 (4.9)	10 (2.8)	43 (12.2)	100 (28.4)	182 (51.7)	4.21	1.04	80.1
I store allergen-containing foods and allergen-free foods in the same places. *	119 (33.8)	29 (8.2)	32 (9.1)	75 (21.3)	97 (27.6)	3.02	1.65	42
If I make a mistake while preparing a meal for a customer with a food allergy, I will prepare the meal again.	23 (6.5)	22 (6.3)	25 (7.1)	105 (29.8)	177 (50.3)	4.14	1.15	80.1
When preparing fried foods for customers with food allergies, I make sure to change the oil in the deep fryer to prevent cross-contamination.	17 (4.9)	20 (5.7)	33 (9.4)	111 (31.4)	171 (48.6)	4.16	1.06	80
To prevent cross-contamination, I clean all utensils before preparing food.	14 (4)	16 (4.5)	37 (10.5)	107 (30.4)	178 (50.6)	4.21	1.03	81
When I use foods containing allergens, I use separate utensils (tableware, pots).	16 (4.5)	22 (6.3)	31 (8.8)	107 (30.4)	176 (50)	4.17	1.08	80.4
To prevent cross-contamination between allergens, I use clean and sterilized equipment and kitchen utensils in the kitchen.	20 (5.7)	15 (4.3)	30 (8.5)	98 (27.8)	189 (53.7)	4.20	1.11	81.5
I prevent cross-contamination by preparing allergen-free foods first.	24 (6.8)	23 (6.5)	42 (11.9)	101 (28.8)	162 (46)	4.05	1.16	74.8
When preparing the most common food allergens, I minimize the risk of an allergic reaction by applying heat treatment based on the allergen's characteristics.	25 (7.1)	30 (8.5)	63 (17.9)	106 (30.1)	128 (36.4)	3.81	1.21	66.5
Before using packaged foods, I check the ingredients and read the label.	24 (6.8)	26 (7.4)	39 (11.1)	112 (31.8)	151 (42.9)	4.01	1.16	74.7
If one of my clients has a food allergy, I double-check to make sure the food is prepared safely and does not contain any allergens.	24 (6.8)	16 (4.5)	35 (9.9)	95 (27)	182 (51.8)	4.14	1.16	78.8
Total Behavior Score					49	49	4.22	75

**=Reversely coded statement*
Source: Authors' own elaboration

When behavioral statements were examined, the statements "I wear a clean uniform when preparing food" and "I use clean and sterilized equipment and kitchen utensils in the kitchen to prevent cross-contamination between allergens" scored 81.5%. The statement "I clean all utensils before preparing food to prevent cross-contamination" scored 81%, while the statement "I use separate utensils when handling foods containing allergens" scored 80.4%. However, the statement "I store allergen-containing foods and allergen-free foods in the same places" scored 42%. The statement "When preparing the most common food allergens, I minimize the risk of an allergic reaction by applying heat treatment based on the allergen's characteristics" scored 66.5%. The statement regarding checking the contents of packaged foods received a score of 74.7%, while the statement regarding rechecking the safety of food prepared for customers with food allergies received a score of 78.8%.

Overall, the findings indicate that participants' knowledge and attitudes regarding food allergies are at a moderate level, while their behavioral profile reveals a moderately risky pattern.

5. Discussion

This study examined the levels of knowledge, attitudes, and behaviors regarding food allergies among staff working in food and beverage establishments operating in Şanlıurfa. The findings indicate that participants' knowledge level was 65%, their attitude level was 61%, and their risk level in terms of behavior was 75%. These results indicate that employees possess a certain level of awareness regarding food allergies; however, this awareness is not reflected to the same extent in safe service behaviors. The most striking finding of the study is that, despite knowledge and attitude levels being at a moderate level, the risk level in the behavioral dimension is relatively higher.

The 65% result obtained in the knowledge dimension indicates that employees possess a certain level of knowledge regarding the basic characteristics of food allergies. The majority of participants are aware that food allergies are related to the immune system, can pose serious health risks, and require control during the food production process. However, knowledge gaps persist regarding the fact that even very small amounts of allergens can trigger a reaction, the distinction between food allergies and intolerances, the limited effectiveness of heat treatment on allergenic effects, and the proper identification of certain allergen groups. This result indicates that while employees possess a general level of awareness, they have not yet acquired sufficient expertise regarding the operational details of allergen management. Albayrak and Korkmaz (2022), in their study on food and beverage establishments in Gökçeada, also found that the level of knowledge was moderate, suggesting that this issue is not unique to Şanlıurfa but rather a sector-wide problem observed in various culinary destinations.

The 61% result obtained in the attitude dimension indicates that employees are not entirely indifferent to the issue of food allergies. It is significant in this regard that participants demonstrated positive attitudes toward the need for employees to be knowledgeable about allergens, the importance of allergen labeling, and the need to participate in training programs. However, the limited extent to which food allergies are perceived as a central part of the job indicates that a positive attitude does not always translate into a strong sense of professional responsibility. This finding reveals that when food allergy management is left to employees' personal awareness, it struggles to translate into a sustainable service standard.

The most critical finding of the study emerged in the behavioral dimension. The fact that the behavioral score was found to be at a moderate-risk level (75%) indicates that employees' knowledge and attitude levels do not translate into safe practices to the same extent. This situation points to a disconnect between knowledge, attitude, and behavior. In other words, while employees recognize the importance of food allergies and generally have a positive attitude toward the issue, they may struggle to translate this knowledge into daily operational behavior due to factors such as heavy workloads, time constraints, limited physical space, inadequate equipment, a lack of written procedures, and weak managerial oversight.

In destinations like Şanlıurfa, which have high gastronomic appeal and intense tourist activity, this problem can become even more apparent. Food and beverage establishments operating in tourist areas may have to contend with fast service, high customer turnover, and a fluctuating staff, particularly during peak periods. Under these conditions, preparing allergen-containing and allergen-free products in separate areas, segregating equipment, continuously monitoring menu contents, and ensuring that customer requests are fully communicated between the service and kitchen areas may not always be easy. Therefore, the risk observed at the behavioral level should not be attributed solely to individual staff inadequacies; it must be evaluated in conjunction with the businesses' structural conditions and food safety culture. At this point, the physical capacity of kitchens and equipment availability can be considered significant factors. Particularly in small and medium-sized food and beverage establishments, limited preparation areas, the use of the same equipment for different products, and accelerated workflow during peak hours can increase the risk of cross-contamination. Although participants scored high on some behavioral items, their lower scores on statements regarding the storage of allergen-containing and allergen-free foods and the reduction of allergen effects through heat treatment indicate that practical knowledge is not equally established across all areas. This situation highlights the need not only for theoretical training but also for standard operating procedures and physical arrangements that can be implemented within the business.

Management support and a food safety culture also play a decisive role in explaining behavioral risk. While it is important for employees to be knowledgeable about allergen management, for this knowledge to translate into action, management must establish clear procedures, train employees regularly, ensure menu and recipe standardization, and monitor implementation. If allergen management is not institutionalized as a business policy, fragmented practices reliant on individual employee vigilance may emerge. This situation can lead to inconsistencies in the service process and pose a risk to consumers with allergies. Soon (2020)'s emphasis on food allergy training in food service also highlights the need to address training in terms of continuity, implementation, and monitoring.

Findings regarding training status also support this discussion. The fact that only 38.6% of participants have received training on food allergies indicates that a significant portion of employees have not undergone a structured learning process in this area. The fact that the highest percentage among those who received training was for on-the-job training

underscores the importance of business-based training. However, for on-the-job training to be effective, it must not be limited to short informational sessions; it must be structured to be practical, periodic, and measurable. Allergen management is not merely about knowing which foods are allergens; it is a process that encompasses the entire service chain—from product receipt to storage, from preparation to service, and to communication with customers.

Food allergy management also has significant implications for culinary tourism. In destinations with a strong culinary identity, such as Şanlıurfa, the food and beverage experience is a key component of visitor satisfaction and the destination's image. However, the failure to provide a safe, transparent, and reassuring service for individuals with food allergies can limit their culinary experience. Therefore, allergen management should be viewed not only as a food safety practice but also as a component of an inclusive gastronomic experience. Establishments that offer safe dining options can become a positive factor in destination choice for individuals with allergies and their traveling companions.

Overall, the findings of this study indicate that the fundamental problem in food allergy management is not merely a lack of information. While knowledge and attitude levels suggest a certain level of awareness, the risks observed in behavioral aspects reveal that this awareness has not been sufficiently integrated into business processes. Therefore, the solution should not be limited to merely providing information to employees; it must be supported by the establishment of standard procedures at the organizational level, the implementation of ongoing employee training, increased managerial oversight, improvements in physical conditions, and the strengthening of a food safety culture.

6. Conclusions and Recommendations

This study examined the levels of knowledge, attitudes, and behaviors regarding food allergies among staff working in food and beverage establishments operating in Şanlıurfa. The results revealed that participants' knowledge level was 65%, their attitude level was 61%, and the risk level in the behavioral dimension was 75%. These results indicate that employees are not entirely uninformed or indifferent regarding food allergies; however, their current knowledge and attitudes do not sufficiently translate into safe service behaviors.

The most significant finding of the study is the discrepancy between knowledge and attitude levels and the behavioral dimension. Participants are aware of the importance of food allergies to a certain extent and have a positive attitude toward the issue. Nevertheless, the fact that the behavioral dimension was found to be at a moderate risk level demonstrates that individual awareness alone is not sufficient for allergen management. To ensure safe service delivery, employees' knowledge must be supported by standard practices, written procedures, regular training, and managerial oversight. The theoretical contribution of this research lies in its approach to food allergy management not merely at the level of knowledge or attitude, but within the context of the knowledge-attitude-behavior relationship. The study shows that structural and organizational factors may be decisive in the process by which employees' awareness of the issue translates into behavior. In this regard, the research contributes to the food safety literature by highlighting that allergen management cannot be explained by individual knowledge alone; it must be evaluated in conjunction with organizational culture, workflows, physical facilities, and managerial support.

The study's contribution to the gastronomy tourism literature lies in its examination of food allergy management in a destination with high gastronomic appeal, such as Şanlıurfa, within the context of service quality and an inclusive gastronomic experience. In gastronomy destinations, the food and beverage experience should not be evaluated solely in terms of taste, uniqueness, and cultural representation. For individuals with allergies, the provision of safe, informative, and reassuring service is also a crucial part of the destination experience. Therefore, the research highlights the need to make the dimensions of food safety and allergen management more prominent in gastronomy tourism studies.

The first practical recommendation is the implementation of regular in-service training programs on food allergies and allergen management in food and beverage establishments. These training sessions should not be limited to the transfer of theoretical knowledge alone. Preventing cross-contamination, storing allergen-containing products separately, verifying label and ingredient information, providing accurate responses to customer inquiries, strengthening kitchen-to-service communication, and outlining steps to follow in emergency situations should form the core content of these training sessions.

Second, written standard operating procedures regarding allergen management must be established in establishments. Menu items must be clearly defined, common allergens must be prominently listed, recipes must be standardized, and separate protocols must be developed for the preparation and storage of products containing allergens and those that do not. In this way, food allergy management can be institutionalized rather than left to the personal experience of employees.

Third, business managers must strengthen the culture of food safety. Allergen management should not be viewed solely as the responsibility of kitchen staff; it must be addressed as a coordinated process involving management, service staff, kitchen workers, and the purchasing department. Managers should ensure the sustainability of these practices through regular checklists, internal audits, and periodic training.

Fourth, in gastronomic destinations such as Şanlıurfa, local governments, professional associations, tourism stakeholders, and educational institutions should work together to develop programs aimed at raising allergen awareness. Short-term certification programs, informational guides, and standardized menu labeling practices for businesses operating in tourist areas can provide practical contributions in this regard. Such initiatives can both enhance consumer safety and strengthen the destination's image as an inclusive and reliable gastronomic destination.

The study has certain limitations. The research was conducted exclusively in Şanlıurfa, at specific food and beverage establishments operating in areas with high tourist traffic. Data were collected over a specific time period and on a voluntary basis. Therefore, caution should be exercised when generalizing the findings to the entire food and beverage sector. Additionally, the fact that the study was conducted during a period of relatively lower tourist traffic may have prevented seasonal workers and peak-season operations from being fully reflected in the research.

Future research could include comparative studies across different gastronomic destinations, business types, and seasons. Furthermore, supplementing quantitative findings with qualitative interviews could contribute to a more detailed understanding of the structural factors that prevent employees from translating their knowledge and attitudes into action. Multi-stakeholder research involving business managers, kitchen staff, service personnel, and consumers with food allergies could more comprehensively reveal all dimensions of allergen management within the service process.

In conclusion, this study demonstrates that food allergy management in food and beverage establishments in Şanlıurfa is an important area requiring improvement. While employees' levels of knowledge and attitudes indicate a certain level of awareness, the risks observed in terms of behavior reveal that a culture of safe service has not yet been sufficiently established. Therefore, allergen management should be elevated from a matter of individual vigilance to an institutional practice reinforced by training, procedures, monitoring, and management support.

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