

An Analysis of Student Satisfaction in Institutional Food Services and the Food Safety Practices of Food Service Personnel

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ABSTRACT: The aim of this study is to examine the satisfaction levels of university students with institutional food services and to investigate the food hygiene and food safety behaviors of food service personnel. A total of 217 university students and 38 food service personnel working in institutional food services participated in the study on a voluntary basis. A satisfaction survey about university dining services was administered to the students, while a survey on food safety and hygiene was administered to the food service personnel. The data obtained were analyzed using SPSS 26. The main reasons for students preferring the university dining services were the affordability for 53.5% of students and the time constraints for 46.5%. Female students were found to have higher satisfaction levels with dining services compared to male students ($p < 0.05$). The highest average scores in dining services were related to service features, while the lowest were observed for menu features. It was determined that all food service personnel participating in the study had received food safety or hygiene training. There were no statistically significant differences in the food safety behaviors and hygiene scores of the food service personnel based on gender ($p > 0.05$). In conclusion, it was determined that various factors influence satisfaction with university dining services and that the knowledge level of food service personnel is important for ensuring food safety.

KEYWORDS: Institutional food services, student satisfaction, food safety, food hygiene.

INTRODUCTION

Adequate and balanced nutrition is essential for protecting individuals' health, supporting mental development, fostering social and economic growth, and enhancing overall well-being (1,2). Technological developments, the increase in the number of people entering the working life and the reasons brought by urbanization raise the need for mass catering. Therefore, individuals meet their nutritional needs in places such as cafes, restaurants, institutional dining halls (3).

In institutional food service systems, it is essential to meet the nutritional needs of customers in a high-quality and hygienic manner and minimize the generation of waste. Institutional food services at universities are of importance because they meet the nutritional needs of students and staff. It has been observed that most universities today do not meet all the requirements of their students with the mass catering service they offer to their students (4). For this reason, the satisfaction level of those who benefit from institutional food services and the sustainability of the service offered are important. In addition, the planned menus in these institutions are expected to meet the energy and nutritional requirements of students, to be sufficient in terms of quality and quantity, to be visually appealing and consistent in color, texture, and appearance, and to include various food groups (5). The institutional food service offered by universities is an important part of the services that contribute to the quality of life of students. For this reason, many factors such as service quality, satiety, price, product variety, and hygiene affect the students' satisfaction with the institutional food service (4).

Organizations providing institutional food services should ensure customer satisfaction by offering healthy menus that sufficiently meet the nutritional needs of individuals. In this regard, hygiene is indispensable. If hygiene and sanitation are not prioritized in institutions, negative consequences can arise for consumers (6). To ensure hygiene in institutions, cleaning of kitchens and utensils, food safety, personnel hygiene, and providing hygiene training to staff are essential (1). To prevent contamination and poisoning in food, it is crucial that the hands, body, and clothing of personnel working in the kitchen are hygienic (7, 8). Hygiene training for personnel working in institutions is crucial for the quality, continuity of the nutrition service provided, and the protection of consumer health (9).

Due to reasons such as reducing the waste generated in institutional food services, meeting the healthy and reliable nutritional needs of students, preventing poisoning, increasing student satisfaction, determining the personnel hygiene information status is important in terms of providing the necessary hygiene training to personnel (10,11). The aim of this research is to examine the satisfaction

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levels of students who benefit from institutional food services at a state university in Türkiye and to determine the hygiene knowledge level of kitchen staff.

MATERIAL AND METHODS

Sample Selection and Data Collection: This research covers university students who benefit from the institutional food service at a university in a province of Türkiye in the 2022-2023 academic year and kitchen staff who work in the institutional food service. A questionnaire was administered through face-to-face interviews to 217 students who study in different departments of the university and benefit from the institutional food service. A questionnaire was also applied to 38 staff members employed in the university's food service by face-to-face interview method. Individuals were informed verbally and in writing before the survey on a voluntary basis and then included in the research. In this study, data were collected through face-to-face interviews with university students participating in the research and personnel working in institutional food services, using a survey method. Before the research began, informed consent was obtained from the participants via an Information Form. The 18-question 'Student Satisfaction with University Food Services Questionnaire,' applied by Sönmez (4) in his master's thesis, was administered to the students benefiting from food services through face-to-face interviews. The survey also included questions about the organoleptic properties, menu, and service characteristics of the dishes, with responses rated on a 5-point likert scale: very poor, poor, average, good, and very good. The questionnaire used in the master's thesis by İnalkaç's (12) was administered to the personnel working in institutional food services. There are 20 questions in the questionnaire about the nutritional safety information and behaviors applied to the personnel. They were asked to select these expressions as 1-always, 2-mostly, 3-sometimes, 4-rarely, 5-never. In the survey where the food hygiene applied to the personnel is examined; there are 12 questions. They were asked to encode these statements as 1-true 2-false 3-I'm not sure. The scores obtained from the survey and its sub-dimensions were aggregated to determine individuals' food safety behavior scores.

Ethical Consideration: Scientific and universal principles were followed in this study. The study was conducted in accordance with the Declaration of Helsinki. This study was approved by the Bayburt University ethics committee (Date:25.11.2022/ Decision no:263/12). Written informed consent was obtained from the individuals. Before the data were collected by the researchers, the participants were informed about the study and their verbal/written consents were obtained. Volunteers were included in the study.

Statistical Analysis of the Data: The data obtained in the research were analyzed using the SPSS 26.0 program. As a result of the analysis conducted for the normality test of the data, the skewness and kurtosis values of all questionnaires and sub-dimensions were found to be within the range of -2 and +2, and it was assumed that the normality assumption was met. Based on this, parametric tests were used for scales and sub-dimensions that met the normality assumption, while non-parametric tests were applied to those that did not meet the assumption. An independent sample t-test was used for the gender variable from the demographic questions. Cronbach's alpha analysis was performed to determine the reliability values of the surveys and their sub-dimensions. The Cronbach's alpha internal consistency coefficient calculated for the food safety behaviors questionnaire administered to kitchen staff was 0.909, while the coefficient calculated for the food hygiene questionnaire was 0.824. In the analyses, p-values <0.05 were considered statistically significant.

RESULTS AND DISCUSSION

The study included 217 university students. Of the students who participated in the study, 68.7% were women (n=149) and 31.3% were men (n=68). The average age of all students was found to be 21.56 ± 1.63 (range: 18-26) years (not shown in the table). According to Table 1, the frequency of most students using the cafeteria was every day (35.5%) or 3-4 times a week (29.5%). It is thought that this condition may be caused by the length of lesson hours and time spent at university. A review of the literature reveals various factors influencing students' preferences for institutional food services at universities. In a study, the fact that the university dining hall is close to the school, providing affordable services, being easily accessible and providing students with the opportunity to socialize are among the reasons for preference (4). Another reason in the study is that the service provided is clean and fast and the meals are liked (13). In the current study, the reasons why students prefer the institutional food service at the university that it is cheap for 53.5% of the students and time constraints for 46.5% of the students. These findings show similarities with other study results.

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Table 1. The frequency and reasons for students' use of the university's institutional food service

	n	%
Frequency of use		
Everyday	77	35.5
3-4 times a week	64	29.5
1-2 times a week	37	17.1
1 in 15 days	9	4.1
1 per month	30	13.8
The reason for preference		
Cheap	116	53.5
Time constraints	101	46.5

Service features include the form of service, cleaning of equipment such as plates, knives and trays, cleaning of service personnel, behavior of service personnel and serving hours of meals. The menu feature refers to the variety of dishes, the harmony of dishes in terms of color and consistency, the frequency of repetition of the same dishes and healthy nutrition criteria (3). The taste and appearance of the food are influenced by organoleptic properties such as color, shape, consistency and smell. In a study conducted, it is stated that more attention should be paid to the organoleptic properties of dishes in order to increase the satisfaction level of the university's institutional food service (14). In the current study, the average score that students received from the food service satisfaction survey was calculated as 2.87 ± 0.8 . When the sub-dimensions were examined, the highest average scores were taken from the service features sub-dimension and the lowest average scores were taken from the menu features sub-dimension (Table 2). The reasons for this situation may be that service features in food services are more noticeable to businesses and receive more attention, or that students lack sufficient menu variety and content.

Table 2. Descriptive statistics of the surveys

Survey	Min.	Max.	\bar{X}	SD	Skewness	Kurtosis	Cronbach Alfa
Satisfaction with food services	1.00	4.83	2.8715	.80361	-.272	.011	0.938
Organoleptic properties	1.00	4.86	2.8723	.80628	-.240	-.052	0.855
Menu features	1.00	5.00	2.4124	.98680	.399	-.316	0.862
Service features	1.00	5.00	3.1330	.96685	-.362	-.179	0.916
Food safety behaviors	1.00	2.00	1.3605	.29913	.435	-.891	0.909
Food hygiene	1.00	1.75	1.2719	.19051	.775	.946	0.824

Statistically significant differences were found in the survey and all sub-dimensions when the students' satisfaction scores with food services were compared according to gender ($p < 0.05$). Significant differences were due to the high average scores received by female students (Table 3). In a study conducted; it was determined that there is a significant difference between gender and service characteristics, and there is no significant difference between gender and organoleptic and menu services (4). In the same way, in another study, it was concluded that there is a significant difference between gender and service characteristics (15). The current study is similar to other studies in this respect, but it has been found that women students differ from men in all categories due to the high scores they have received in each category. This difference between the sexes may be due to differences in individual preferences, expectations and perception levels.

Table 3. Comparison of food service satisfaction scores by gender (T-Test)

	Gender	n	\bar{X}	SD	t	p
Satisfaction with food services	Woman	68	3.2443	.64519	4.851	.000
	Man	149	2.7013	.81305		
Organoleptic properties	Woman	68	3.2059	.59564	4.279	.000
	Man	149	2.7200	.84481		
Menu features	Woman	68	2.7132	1.04495	3.093	.002
	Man	149	2.2752	.93077		
Service features	Woman	68	3.5861	.79180	4.907	.000
	Man	149	2.9262	.97112		

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According to Table 4, a total of 38 food services personnel participated in the study. Of the personnel, 73.7% were women (n=28), and 26.3% were men (n=10). The average age of the personnel was 41.52 ± 7.60 years (range: 24-53).

Hygiene education is one of the essential training programs that should be provided to food service personnel to prevent foodborne diseases. This training equips kitchen staff with knowledge about important aspects such as understanding foodborne diseases, notifying supervisors of any illnesses that could impede work, the importance of leaving work when ill, and the proper procedures for hand hygiene (16). In the current study, it was found that all personnel (n=38) had previously received food safety or hygiene training (not shown in the table).

Table 4. Information about the food services personnel

	n	%
Gender		
Woman	28	73.7
Man	10	26.3
Educational status		
Elementary/middle school	21	55.3
High school graduate	14	36.8
Associate degree/Bachelor's degree	3	7.9
Working time in the food industry (year)		
<1		
1-5	6	15.8
6-10	30	78.9
	2	5.3

The average score obtained from the food safety behaviors survey of women from the institutional food service personnel was found to be 1.37 ± 0.2 and the average score obtained from the food hygiene survey was found to be 1.27 ± 0.2 . The average score of male employees from the food safety behaviors survey was 1.32 ± 0.3 and the average score from the food hygiene survey was 1.26 ± 0.0 . According to the independent samples t-tests conducted to compare employees' food safety behaviors and their scores on the food hygiene questionnaire by gender, no statistically significant differences were found ($p > 0.05$) (Table 5). This may be due to the fact that all kitchen employees receive the same training related to the food sector or due to the similarity in the periods of their professional experience.

Table 5. Comparison of food safety behavior and food hygiene questionnaire scores by personnel gender (T-Test)

	Gender	n	\bar{X}	SD	t	p
Food safety behaviors	Woman	28	1.3750	.28268	.494	.624
	Man	10	1.3200	.35449		
Food hygiene	Woman	28	1.2738	.21855	.100	.921
	Man	10	1.2667	.07658		

CONCLUSION

In this study, the satisfaction levels of university students with institutional food services and the hygiene behaviors of university food service personnel were evaluated. Among the reasons students preferred the institutional food services, economic affordability and time constraints for meals stood out. It was determined that female students were more satisfied with the food services compared to male students. All food service personnel had received training on food safety and hygiene, and no gender differences were found in terms of food safety and hygiene behaviors among the food service personnel. These findings are significant for the improvement of mass catering services. Further research is needed to better understand the factors influencing satisfaction with food services, their reasons, and the factors affecting food safety behaviors.

CONFLICTS OF INTEREST: The authors declare no conflicts of interest.

ACKNOWLEDGMENT

This study was conducted by TUBITAK Directorate of Scientist Support Programs (BIDEB), 2209-A University Students Research Projects Support Program 2022 year 1. the period was supported within the scope of the project implementation numbered 1919B012207682. We would like to express our gratitude to the TUBITAK institution.

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