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Original Article

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First Aid Knowledge and Attitudes of Restaurant Employees in Foreign Body Aspiration Accidents: A District-Based Study in İstanbul

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Abstract

Aim: The aim of this study is to examine the level of first aid knowledge and attitudes of the personnel working in restaurant establishments in a selected district of İstanbul province.

Materials and Methods: The sample of the study consists of 44 restaurant/restaurant employees. SPSS 22 Package Program was used to analyze the data.

Results: Among participants, 31.8% had first aid knowledge-skills, 15.3% had encountered a tracheal foreign body incident, and 6.9% had intervened. Knowledge-skills specific to tracheal foreign body were present in 28.4%, and 19.3% held a first aid certificate; 59.6% were willing to receive training. Knowledge scores differed significantly by first aid knowledge-skills and by encountering or intervening in such cases. Attitude scores differed significantly by age, workplace position, years of employment, first aid knowledge-skills, prior intervention, and certification status.

Conclusion: The rates of having first aid knowledge, skills, and prior intervention experience among restaurant employees were low despite their frontline role in settings where choking incidents are likely to occur. The strong association between higher knowledge and attitude scores and having first aid training or experience indicates that structured education can effectively improve preparedness. Given that most participants were willing to receive training, incorporating regular first aid and basic life support programs into workplace safety policies for the food service sector could strengthen bystander response and reduce preventable deaths from foreign body airway obstruction.

Keywords: Airway obstruction, first aid, foreign body aspiration, respiratory aspiration, restaurants

Introduction

Foreign body aspiration (FBA) is a time-critical medical emergency in which delays in recognition or intervention may rapidly lead to hypoxia and death (1). Survival often depends on the ability of bystanders to deliver effective first aid, most notably abdominal thrusts (the heimlich maneuver), which remain the primary method for relieving airway obstruction in conscious individuals (2). Although national data on choking events in restaurant environments in Türkiye are lacking, foreign body airway obstruction (FBAO) carries an adult fatality rate exceeding 3% globally (3), and is accurately identified in fewer than 10% of cases requiring assistance (4).

Choking episodes frequently occur during meals, making public dining environments a high-risk setting. Recent epidemiological evidence from Türkiye, based on 192 media-reported cases, indicates that 21.4% of FBA incidents took place in restaurants, with food items predominating as aspirated materials (5). This pattern highlights the need to assess and strengthen the preparedness of restaurant personnel, who are often the only individuals present during the critical early moments of airway obstruction.

Consistently, international studies report food as the leading cause of FBA across all age groups (6,7), yet the readiness of non-medical frontline workers in dining settings remains insufficiently

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studied. Despite their pivotal role in recognizing and responding to choking, restaurant workers are not included in mandatory first aid certification frameworks in Türkiye. This gap underscores the need for evidence to guide workplace safety regulations and community-based emergency response strategies.

This study therefore aims to evaluate the first aid knowledge and attitudes of restaurant workers in a district of İstanbul, providing baseline data to inform targeted training programs and support policy development to enhance emergency response capacity in restaurant settings.

Materials and Methods

Study Design

This study was designed as a cross-sectional study. The research hypotheses are as follows:

H1-1: The sociodemographic characteristics of restaurant staff substantially affect their knowledge of first aid for FBA.

H1-0: The sociodemographic characteristics of restaurant staff do not substantially affect their knowledge of first aid for FBA.

H2-1: The first aid training and experience of restaurant staff significantly affect their knowledge of first aid for FBA.

H2-0: The first aid training and experience of restaurant staff do not significantly affect their knowledge of first aid for FBA.

H3-1: Restaurant staff who have received first aid training and have experience in FBA incidents have significantly more positive attitudes toward first aid interventions.

H3-0: There is no significant relationship between first aid training, experience, and attitudes toward first aid interventions.

Study Population and Sample

The study population comprises employees from 260 restaurants situated in the Üsküdar area. The number and locations of these restaurants were acquired from the Licensing Department of the Üsküdar Municipality.

The district consists of 33 neighborhoods, with the distribution of restaurants as follows: Twenty-two neighborhoods contain between 1 and 10 restaurants, five neighborhoods contain between 11 and 20, four neighborhoods contain 21 or more, and two neighborhoods have no restaurants at all. A total of 44 restaurants were included in the sample. One restaurant was selected from each of the 22 neighborhoods with 1-10 restaurants, two restaurants from each of the five neighborhoods with 11-20 restaurants, and three restaurants from each of the four neighborhoods with 21 or more restaurants.

A simple random sampling technique was used for sample selection. Restaurants were sorted according to their license numbers and neighborhoods, and 44 establishments were randomly chosen. Furthermore, 44 other restaurants were randomized as contingency possibilities should a selected restaurant refuse participation.

The study was conducted between March 8 and March 20, 2023.

Every member of staff present during the in-person visits to the selected restaurants were invited to participate in the study. Participation was optional, and no staff members dropped out. The sample comprises all on-site staff who provided consent to participate during the data collecting period. A flow diagram titled "Participant Recruitment and Inclusion Process" has been inserted in the Methods section (Figure 1).

Sample Size and Power Analysis

A priori power analysis was performed with G*Power (version 3.1.9.4) to ascertain the minimal sample size necessary for the investigation. With a medium effect size (Cohen's d=0.5), a significance threshold of α=0.05, and a target power of 0.80 for a two-tailed independent samples t-test, the necessary total sample size was determined to be 128 individuals.

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Data Collection Tools

In this study, staff from restaurants were instructed to independently complete a three-part questionnaire under observation. The questionnaire comprised:

Section 1: 12 questions assessing basic demographic and professional information.

Section 2: 26 questions measuring knowledge levels regarding FBA accidents.

Section 3: 13 questions evaluating attitudes towards FBA accidents.

The researchers constructed the questionnaire items based on the content of the Turkish Ministry of Health First Aid Handbook. Prior to the preparation of the original draft, the questionnaire underwent evaluation by a panel including a public health professor, a public health expert, an emergency medicine

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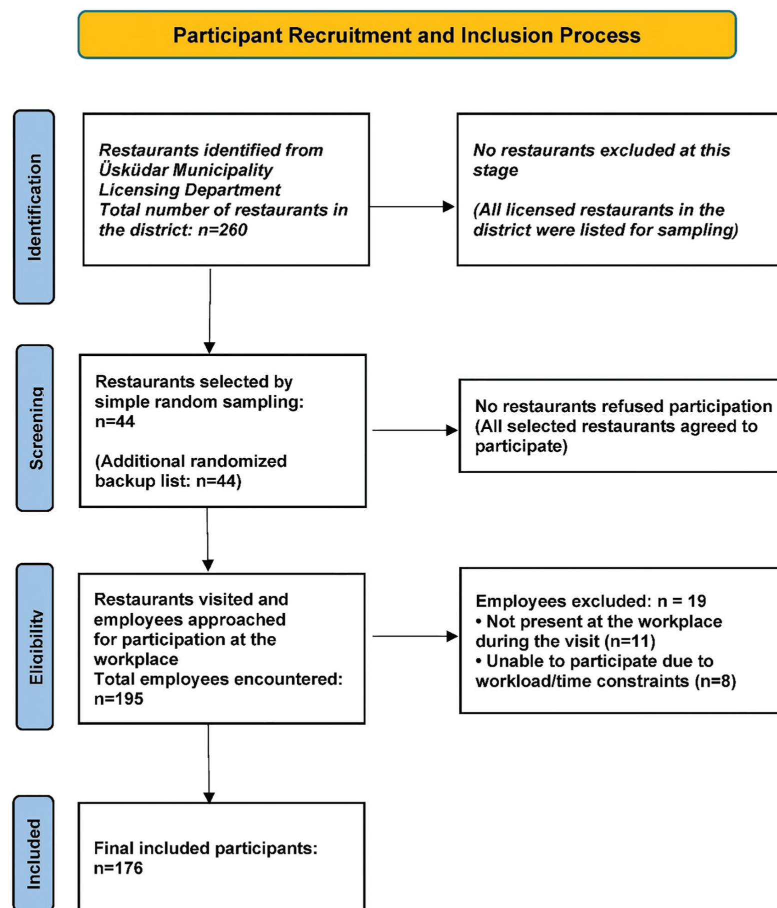

Figure 1. Flow diagram of the participant recruitment and inclusion process

professor, and a psychiatric counselor. Modifications were implemented in response to their suggestions to enhance clarity, content validity, and relevance. A pilot test was administered to evaluate comprehensibility with a cohort of 10 volunteer restaurant staff. Their feedback was utilized to make final modifications prior to deployment. The pilot group data were exclusively utilized for questionnaire refinement and excluded from the final analysis.

The researchers formulated the questions utilizing the Turkish Ministry of Health First Aid Handbook (8). In the knowledge evaluation survey, replies were evaluated as follows: accurate answers earned 1 point, but erroneous answers or "I don't know" responses received 0 points. The total potential scores varied from a minimum of 0 to a maximum of 26.

Knowledge levels were categorized as follows:

Inadequate knowledge level: 0-7 points (<25% correct answers)

Moderate knowledge level: 8-13 points (25-50% correct answers)

Adequate knowledge level: 14-26 points (>50% correct answers)

For the attitude survey, responses were rated on a five-point likert scale: "Strongly agree," "Agree," "Neutral," "Disagree," and "Strongly disagree." The questionnaire included 24 statements, each scored between 1 and 5 points, with a total possible score ranging from a minimum of 13 to a maximum of 65.

The internal consistency of the questionnaire was evaluated using Cronbach's alpha. The reliability analysis demonstrated satisfactory internal consistency for both sections of the instrument, with α=0.789 for the 26-item knowledge section and α=0.777 for the 13-item attitude section.

Ethical Considerations

Before the initiation of the investigation, formal consent was obtained from the University of Health Sciences Hamidiye Scientific Research Ethics Committee (decision no.: 2023/3, date: 10.02.2023). The principles of the Declaration of Helsinki were rigorously followed throughout the study.

Participant Consent

Informed consent was obtained from all participants prior to their inclusion in the study.

Statistical Analysis

The data acquired in this study were analyzed utilizing SPSS version 23. Descriptive statistics were reported as mean ± standard deviation, median (1st quartile-3rd quartile), frequency, and percentage. The normality of continuous variables was evaluated using Shapiro-Wilk tests. Both the knowledge and attitude score distributions deviated from normality; therefore, non-parametric tests were used in the analyses. Consequently, non-parametric tests were utilized. The Mann-Whitney U test was used for pairwise comparisons of non-normally distributed continuous variables, whilst the Kruskal-Wallis test was applied for comparisons involving more than two independent groups. Upon discovering significant differences, post hoc pairwise comparisons were performed with the Dunn-Bonferroni test. A p value of less than 0.05 was deemed statistically significant.

Results

Of the participants, 79% were male, and 42% belonged to the 17-30 age demographic. Regarding educational attainment, 55.7% were high school graduates. Concerning employment positions, 39.8% were employed as waiters. The distribution of work experience indicated that 50.6% had been working for 0 to 8 years. Furthermore, 36.9% of participants were employed in firms with 1 to 14 employees. 31.8% of participants reported possessing knowledge and abilities in first aid procedures. The incidence of those who had previously experienced a FBA event was 15.3%, but the percentage of those who had intervened in such cases at least once was 6.9%. 28.4% of participants have knowledge and abilities in first aid interventions for FBA. Furthermore, 19.3% of participants possessed a first aid certification, although 59.6% indicated a readiness to undergo first aid training. The participants' average knowledge score was 11.68±4.32, signifying a moderate degree of knowledge level (Table 1). The distribution of participants across knowledge-level categories was as follows: 17.04% were classified as inadequate, 46.02% as moderate, and 36.94% as adequate (Figure 2).

The analysis of the correlation between participants' knowledge level scores and their socio-demographic features, as well as their knowledge and practices about first aid, reveals no statistically significant difference in the median scores among parents. Upon analysis by age groups, the median score for the 31-44 age cohort was elevated, with no statistically significant differences identified. The analysis revealed that the median score of secondary school graduates was elevated, while that of elementary school graduates was reduced, with no statistically significant difference identified. The analysis revealed that the median scores of waiters and managers were elevated and not statistically significant. No statistically significant difference exists between the median scores based on years of employment at the workplace. No statistically significant variation was seen in the median ratings based on the number of employees at the workplace. The median score of those possessing a first aid certificate is elevated, and there exists no statistically significant disparity. The median score of individuals inclined to obtain a first aid certificate is elevated in the response "I am undecided," and it lacks statistical significance. Significant differences were observed in knowledge level scores related to the possession of knowledge and skills in first aid practices (p=0.001, r=0.26), prior experience with a FBA incident (p=0.036, r=0.16), intervention in such incidents (p=0.040, r=0.15), and possession of knowledge and skills in first aid interventions for FBA (p<0.001, r=0.34) (Table 2).

The findings indicate that there is no statistically significant difference in the median attitude scores of participants when compared to their socio-demographic characteristics, knowledge, and practices related to first aid. The analysis indicated that the median score for high school graduates was elevated, while the median score for literate individuals was lower, with no statistically significant difference observed. No statistically significant difference was observed in the median scores based on the number of employees in the workplace. The median score of individuals who intervened in FBA incidents was higher, though this difference was not statistically significant. The median score of individuals willing to obtain a first aid certificate was higher for the statement "I don't want to," although this difference was not statistically significant. Significant differences in attitude scores were observed based on age group (p=0.012, η^2=0.04), job position (p=0.022, η^2=0.03), and years of employment (p=0.018, η^2=0.03). No statistically significant difference was observed when comparing the attitude scores of participants regarding FBA incidents and their willingness to receive first aid training. Significant differences in attitude scores were observed based on knowledge and skills in first aid practices (p<0.001, η^2=0.07), intervention during a FBA incident (p=0.002, η^2=0.05), knowledge and skills in first aid interventions for FBA (p<0.001, η^2=0.08), and possession of a first aid certification (p=0.040, η^2=0.02) (Table 3).

Participants exhibited a low percentage of correct responses to specific key statements in the knowledge assessment survey. A notable proportion of respondents failed to correctly identify the key signs of complete airway obstruction, including inability to breathe, clutching the neck, inability to speak, and cyanosis. Among the items with the lowest correct response rates, only 2.3% of participants correctly identified the proper positioning of an infant during a choking intervention.

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Table 1. Distribution of data about the socio-demographic characteristics of participants and their knowledge and habits related to first aid

Age, years (median, minimum-maximum)		34 (17-70)
Years of employment (median, minimum-maximum)		8 (0-40)
Number of employees in the workplace (median, minimum-maximum)		25 (1-343)
Knowledge level score (mean ± SD)		11.68±4.32
Attitude score (mean ± SD)		50.06±7.26
		n (%)
Gender	Male	139 (79.0)
	Female	37 (21.0)
Age group	17-30 years	74 (42.0)
	31-44 years	72 (41.0)
	45-70 years	30 (17.0)
Educational status	Literate	6 (3.4)
	Primary school	16 (9.1)
	Secondary school	30 (17.0)
	High school	98 (55.7)
	University	26 (14.8)
Job position	Waiter	70 (39.8)
	Kitchen staff	30 (17.0)
	Busboy	14 (8.0)
	Business owner	12 (6.8)
	Cashier	10 (5.7)
	Other	19 (10.8)
	Manager/supervisor	21 (11.9)
Years of employment	0-8 years	89 (50.6)
	9-20 years	58 (33.0)
	21-40 years	29 (16.5)
Number of employees in the workplace	1-14 employees	65 (36.9)
	15-40 employees	51 (29.0)
	41-343 employees	60 (34.1)
Possession of knowledge and skills in first aid practices	No	36 (20.5)
	Partially	84 (47.7)
	Yes	56 (31.8)
Encountering a foreign body aspiration incident	No	149 (84.7)
	Yes	27 (15.3)
Number of interventions for foreign body aspiration incidents	Never intervened	164 (93.1)
	Once	7 (4.0)
	Twice	4 (2.3)
	Three times	1 (0.6)
Possession of first aid knowledge and skills related to foreign body aspiration incidents	No	41 (23.3)
	Partially	85 (48.3)
	Yes	50 (28.4)
Possession of a first aid certification	No	142 (80.7)
	Yes	34 (19.3)
Willingness to receive first aid training	Do not want	33 (18.8)
	Undecided	38 (21.6)
	Want	105 (59.6)

SD: Standard deviation

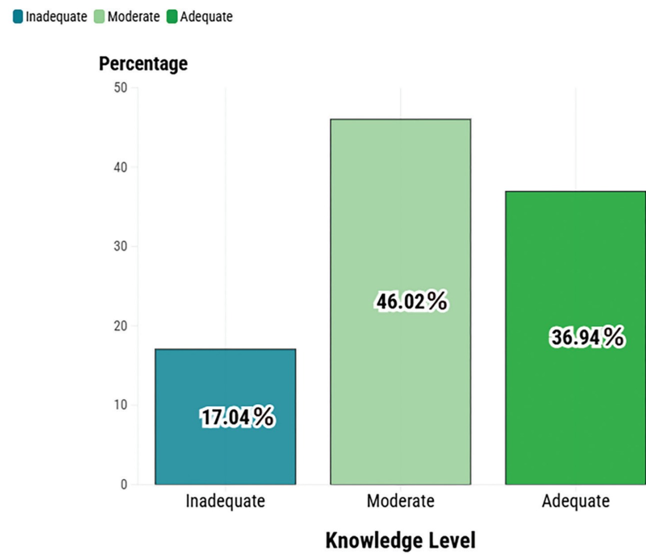

Figure 2. Distribution of participants by knowledge level scores

Table 2. Analysis of participants' knowledge level scores in relation to their socio-demographic factors and conclusions of their knowledge and behaviors regarding first aid

		Median (Q_1-Q_3)	p
Gender	Male	12 (9-15)	0.364
	Female	12 (7-14.5)	
Age group	17-30 years	12 (8-15)	0.067
	31-44 years	13 (11-15)	
	45-70 years	11 (8.5-14)	
Educational status	Literate	11 (4.75-17.5)	0.107
	Primary school	9 (7-13.25)	
	Secondary school	13 (8.75-14.25)	
	High school	12.5 (10.75-15)	
	University	11.5 (8.75-15)	
Job position	Waiter	13 (10-16)	0.159
	Kitchen staff	12 (9-15)	
	Busboy	9 (4.25-13)	
	Business owner	11.5 (7.5-14)	
	Cashier	11.5 (6.75-15.25)	
	Other	11 (7-14)	
	Manager/supervisor	13 (10-15)	
Years of employment	0-8 years	12 (8-15)	0.637
	9-20 years	12 (9-15)	
	21-40 years	12 (11-15)	
Number of employees in the workplace	1-14 employees	12 (8.5-15.5)	0.696
	15-40 employees	12 (9-15)	
	41-343 employees	11.5 (10-14)	
Possession of knowledge and skills in first aid practices	No[1]	10.5 (6-13.75)	**0.001**[**]
	Partially[2]	12 (9-14.75)	
	Yes[3]	13 (11-16)	1<3

Table 2. Continued

		Median (Q_1-Q_3)	p
Encountering a foreign body aspiration incident	No	12 (9-15)	**0.036***
	Yes	14 (11-16)	
Number of interventions in foreign body aspiration incidents	Never intervened	12 (9-15)	**0.040***
	Intervened (includes 1, 2 and 3 times)	14.5 (12.25-15.75)	
Possession of first aid knowledge and skills in foreign body aspiration incidents	No[1]	10 (6-13)	**<0.001******
	Partially[2]	12 (9-15)	1<2
	Yes[3]	14.5 (11.75-16)	1<3 2<3
Possession of a first aid certification	No	12 (9-15)	0.147
	Yes	13 (11-15)	
Willingness to receive first aid training	Do not want	13 (9-15)	0.201
	Undecided	13.5 (9.5-16)	
	Want	12 (9-14)	

Q_1: 25th percentile, Q_3: 75th percentile, *p<0.05, **p<0.01, ***p<0.001
Superscripts ([1]–[7]): Subgroup numbering for post-hoc comparisons. "1<2" indicates a significantly lower median in subgroup 1 than in subgroup 2

Table 3. Analysis of participants' attitude ratings in relation to their socio-demographic factors and findings of their knowledge and behaviors on first aid

		Median (Q_1-Q_3)	p
Gender	Male	50 (47-55)	0.607
	Female	51 (46.5-56)	
Age group	17-30 years[1]	49 (44.75-53)	**0.012***
	31-44 years[2]	52 (48-56)	1<2
	45-70 years[3]	52 (47-57.25)	
Educational status	Literate	48 (32-51.25)	0.479
	Primary school	50.5 (39.75-54)	
	Secondary school	50.5 (44.75-57)	
	High school	51 (47-55.25)	
	University	50 (48-54.5)	
Job position	Waiter[1]	51 (47-56)	**0.022***
	Kitchen staff[2]	51 (49-56)	3<1
	Busboy[3]	46.5 (39-50.75)	3<7
	Business owner[4]	53.5 (49.25-58.5)	3<2
	Cashier[5]	50 (44-54)	3<4
	Other[6]	49 (42-52)	6<2
	Manager/supervisor[7]	52 (48-56.5)	6<4
Years of employment	0-8 years[1]	47 (40.25-50.75)	**0.018***
	9-20 years[2]	50 (45.5-53)	
	21-40 years[3]	46 (38-54)	1<3
Number of employees in the workplace	1-14 employees	51 (48-56)	0.487
	15-40 employees	50 (46-55)	
	41-343 employees	50.5 (47-55)	

Table 3. Continued

		Median (Q_1-Q_3)	p
Possession of knowledge and skills in first aid practices	No[1]	47 (40.25-51.75)	**<0.001*****
	Partially[2]	51 (48-54)	1<2
	Yes[3]	52 (48-57)	1<3
Encountering a foreign body aspiration incident	No	50 (47-55)	0.316
	Yes	52 (45-58)	
Number of interventions in foreign body aspiration incidents	Never intervened	57 (46-60)	0.002**
	Intervened (includes 1, 2 and 3 times)	62 (55.75-64.5)	
Possession of first aid knowledge and skills in foreign body aspiration incidents	No[1]	47 (42-51.5)	**<0.001*****
	Partially[2]	51 (47.5-55)	1<2
	Yes[3]	52 (49-58.25)	1<3
Possession of a first aid certification	No	50 (46-55)	**0.040***
	Yes	52 (49-59)	
Willingness to receive first aid training	Do not want	51 (47-57)	0.405
	Undecided	50.5 (47-56)	
	Want	50 (47-54)	

Q_1: 25th percentile, Q_3: 75th percentile, $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$
Superscripts (1–7): Subgroup numbering for post-hoc comparisons. "1<2" indicates a significantly lower median in subgroup 1 than in subgroup 2

Additionally, just 4.0% recognized that FBA can cause fatal airway obstruction in all age groups. Furthermore, only 6.2% of participants accurately recognized that the abdominal thrust maneuver necessitates firm backward and upward pressure exerted with the hands. Additionally, prevalent misconceptions were noted concerning the age group most commonly affected, the significance of children maintaining concentration during meals, and the risks associated with walking or running while eating. Significant misconceptions were identified in first aid practices, particularly regarding the appropriate order of back blows and chest compressions. The findings underscore the necessity for specialized first aid training, with an emphasis on identifying symptoms of airway obstruction and executing suitable first aid techniques (Table 4).

The table below shows the response rates for the attitude survey, classified into the categories of "Strongly agree," "Agree," "Neutral," "Disagree," and "Strongly disagree" (Table 5).

Discussion

This study provides essential insights into an often neglected aspect of public health preparedness: the ability of frontline restaurant personnel to respond effectively to life-threatening choking incidents. Only 6.9% of participants reported having intervened in high-risk food service emergencies, and fewer than one-third indicated possessing the requisite first aid skills. The low prevalence of first aid certification, combined with a significant willingness to undergo training (59.6%), highlights the unmet demand and untapped potential for community-based interventions. These findings highlight the potential value of integrating context-specific, scenario-based first aid training into workplace safety programs, particularly in settings where FBA may occur.

Participants with both knowledge and practical skills in first aid exhibited significantly higher knowledge scores than those lacking such training. Furthermore, individuals possessing full or partial knowledge and skills exhibited more favorable attitudes towards first aid practices compared to those without any training. The findings indicate that theoretical understanding and practical experience are significant factors in emergency preparedness. Previous studies have reported similar associations, indicating that first aid training is correlated with enhanced knowledge and attitudes regarding emergency response (9,10). In the current study, only 28.4% of respondents reported possessing adequate first aid knowledge and skills, highlighting a significant deficiency in public preparedness. The disparity was notably pronounced among individuals with lower educational attainment, underscoring the necessity for enhanced access to first aid education, particularly via community-based initiatives.

Experiencing a real-life choking episode correlated with elevated knowledge scores among participants, although this experience seemingly did not affect their attitudes towards emergency response. This conclusion aligns with other studies indicating that direct exposure to emergencies may improve information retention but does not necessarily influence confidence or the propensity to act (11,12).

Table 4. Responses of participants to the knowledge assessment survey

	Incorrect	Don't know	Correct
	n (%)	n (%)	n (%)
Coughing and grasping the neck may indicate foreign body aspiration into the airways.	16 (9.1)	23 (13.1)	137 (77.8)
In cases of partial airway obstruction, where the individual is attempting to remove the foreign object by coughing, back blows should be administered to facilitate its clearance.	30 (17.1)	21 (11.9)	125 (71.0)
If the individual is attempting to remove the foreign object by coughing, they should be urged to persist in coughing.	34 (19.3)	36 (20.5)	106 (60.2)
Dyspnea, neck gripping in distress, aphonia, and cyanosis are indicators of total airway obstruction.	148 (84.1)	21 (11.9)	7 (4.0)
Intrusion of foreign items, including food particles, plastic, and metal, into the airways can result in life-threatening blockage across all age groups.	153 (86.9)	16 (9.1)	7 (4.0)
Foreign body aspiration in the airway is predominantly reported in adults across all age demographics.	77 (43.8)	37 (21.0)	62 (35.2)
Children should not be interrupted during meals to ensure adequate chewing, swallowing, and focus.	147 (83.6)	21 (11.9)	8 (4.5)
There is no harm in walking or running while eating.	140 (79.6)	18 (10.2)	18 (10.2)
Interruption of oxygen flow to the brain for over five minutes during foreign body aspiration episodes can result in brain damage and mortality.	149 (84.6)	20 (11.4)	7 (4.0)
Rescue interventions for infants and young children are the same as for adults.	25 (14.2)	35 (19.9)	116 (65.9)
The initial step should be to have the individual consume water.	42 (23.9)	25 (14.2)	109 (61.9)
The head should be tilted backward.	84 (47.7)	38 (21.6)	54 (30.7)
A maximum of three back blows should be administered in a sweeping motion.	28 (15.9)	35 (19.9)	113 (64.2)
To initiate the intervention, the rescuer should position themselves behind the individual and secure their torso.	6 (3.4)	20 (11.4)	150 (85.2)
One hand should be clenched into a fist and positioned just below the sternum, while the other hand provides support.	6 (3.4)	31 (17.6)	139 (79.0)
The hands must be forced forcefully backward and upward, with the thumb exerting pressure on the abdomen.	133 (75.6)	32 (18.2)	11 (6.2)
The abdominal thrust procedure must be performed repeatedly until the item is dislodged or the individual becomes unconscious.	21 (12.0)	52 (29.5)	103 (58.5)
When interfering with a newborn, the baby should be positioned face down on the arm, with the head supported and inclined forward.	134 (76.1)	38 (21.6)	4 (2.3)
A maximum of three rapid and vigorous back punches should be delivered between the infant's shoulder blades in a sweeping manner.	30 (17.0)	38 (21.6)	108 (61.4)
Following the administration of back blows, it is imperative to ascertain whether the airway is unobstructed.	7 (4.0)	30 (17.0)	139 (79.0)
If the item does not dislodge following back strikes, the child should be positioned supine with head support.	42 (23.9)	68 (38.6)	66 (37.5)
Position two fingers directly behind the sternum and provide five compressions.	14 (7.9)	70 (39.8)	92 (52.3)
The compression maneuver must be sustained until the foreign object is evacuated or the child becomes unconscious.	24 (13.7)	71 (40.3)	81 (46.0)
An individual may execute the move independently.	49 (27.9)	37 (21.0)	90 (51.1)
They should form a fist and position it behind the sternum.	29 (16.4)	55 (31.3)	92 (52.3)
They should apply pressure to the abdomen by pressing their fist against a solid surface, such as the back of a chair.	14 (8.0)	50 (28.4)	112 (63.6)

Table 5. Responses of participants to the attitude survey

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	n (%)	n (%)	n (%)	n (%)	n (%)
I anticipate that I could witness an individual choking as a result of foreign body aspiration in everyday situations.	67 (38.1)	59 (33.5)	34 (19.3)	5 (2.8)	11 (6.3)
It is my belief that all individuals should possess the capability to execute first aid interventions.	83 (47.2)	41 (23.3)	15 (8.5)	18 (10.2)	19 (10.8)
I argue that restaurant personnel ought to undergo first aid training.	99 (56.3)	51 (29.0)	11 (6.3)	4 (2.3)	11 (6.3)
Consuming meals with bones or fishbones without meticulous removal poses no risk.	96 (54.5)	54 (30.7)	26 (14.8)	0 (0.0)	0 (0.0)
I am certain that I possess the information to intervene.	22 (12.5)	40 (22.7)	76 (43.2)	20 (11.4)	18 (10.2)
I am capable of intervening in such a case.	25 (14.2)	50 (28.4)	69 (39.2)	17 (9.7)	15 (8.5)
I might be unable to intervene out of panic.	42 (23.9)	69 (39.2)	65 (36.9)	0 (0.0)	0 (0.0)
I may assess if an individual's airway is partially or fully clogged by observation.	21 (11.9)	42 (23.9)	84 (47.7)	15 (8.5)	14 (8.0)
I believe that I should call 112 immediately.	67 (38.1)	53 (30.1)	20 (11.4)	22 (12.5)	14 (8.0)
I should not intervene until 112 arrives.	78 (44.3)	59 (33.5)	39 (22.2)	0 (0.0)	0 (0.0)
I believe that the person should be assisted immediately.	76 (43.2)	54 (30.7)	26 (14.8)	8 (4.5)	12 (6.8)
I believe that the abdominal thrust maneuver is life-saving.	77 (43.8)	50 (28.4)	28 (15.9)	5 (2.8)	16 (9.1)
I think that striking the person's chest may be beneficial.	68 (38.6)	56 (31.8)	52 (29.5)	0 (0.0)	0 (0.0)

Participants who intervened in FBA incidents demonstrated significantly greater knowledge and attitude scores than those who did not intervene. This finding indicates that participation in real-life emergencies may improve cognitive comprehension and attitudinal preparedness for first aid. The findings align with prior research, highlighting the reinforcing impact of direct involvement on emergency preparedness (13). Only 6.9% of participants in our study reported intervening in such situations, reflecting a low level of active bystander participation.

The scores for knowledge and attitude were positively correlated with the level of proficiency in first aid. Participants possessing comprehensive first aid knowledge and skills achieved the highest scores, followed by those with partial knowledge, and finally those lacking any training. This sequential pattern reinforces the hypothesis that perceived self-efficacy in first aid is associated with increased knowledge and more positive attitudes. Our findings align with existing literature that similarly associates self-reported competence with enhanced preparedness for emergency situations (14,15). Only 31.8% of participants reported having first aid knowledge and skills. This suggests that both training and opportunities for practical reinforcement —such as scenario-based exercises— may help strengthen preparedness.

No statistically significant differences in knowledge or attitude scores were found between genders, consistent with previous research indicating that gender does not substantially influence first aid knowledge or attitudes (16). Approximately 80% of participants were male, which may have limited the ability to detect potential gender-related differences. Future studies with more balanced samples could help clarify whether gender plays a meaningful role in first aid preparedness.

No statistically significant differences were observed in knowledge scores across age groups. In contrast, attitude scores were significantly higher among participants aged 31-44 compared with those aged 17-30. This pattern is consistent with previous literature indicating that age does not necessarily enhance factual first aid knowledge, yet may be associated with more positive attitudes toward emergency response behaviors (17,18). The age distribution in our sample was relatively balanced—42.0% aged 17-30 and 41.0% aged 31-44—suggesting that the observed difference is unlikely to be attributable to unequal group sizes. The more favorable attitudes in the older cohort may reflect accumulated life experience, including greater exposure to emergencies or caregiving roles, which could enhance perceived responsibility or willingness to intervene in FBA events.

No significant differences in either knowledge or attitude scores were identified across educational levels. This finding is aligned with previous studies reporting that formal educational attainment alone does not reliably predict first aid competence or readiness to intervene (12,19). In our sample, more than half of participants (55.7%) had completed only secondary education, and no significant differences in knowledge or attitude scores were identified across educational levels. These findings suggest that first aid readiness may be independent of formal educational attainment. Accordingly, first aid training programs should be designed to remain accessible and applicable to individuals with varied educational backgrounds.

No significant differences in knowledge levels were seen among occupational occupations; however, attitude ratings exhibited considerable variation. Waiters, managers/directors, culinary workers, and business owners exhibited markedly superior attitude scores compared to bellboys. Furthermore, kitchen personnel and proprietors had elevated attitude ratings relative to other occupational groups. The findings correspond with previous studies indicating that employment status may influence individuals' attitudes about first aid, possibly owing to differences in duties, perceived accountability, and direct engagement in high-risk situations (15). Considering that roughly fifty percent of our sample comprised waiters, this subgroup constitutes a pivotal target for intervention. The variation in attitude scores across occupational groups suggests that training needs may differ among staff roles. Therefore, first aid programs in food service settings should be implemented in a way that ensures all personnel receive consistent and role-appropriate instruction.

No significant differences in knowledge scores were seen according to years of work. Participants with 21-40 years of work experience had markedly superior attitude ratings in comparison to those with 0-8 years of experience. These findings align with other research suggesting that professional tenure may not directly impact theoretical understanding, although might positively alter attitudes toward emergency response (20). Differences in attitude scores across experience groups suggest that longer employment may be associated with greater comfort or willingness to intervene, although this study was not designed to determine causality. The absence of variation in knowledge scores across experience levels indicates that work tenure alone may not influence factual first aid knowledge.

Participants exhibited a moderate level of first aid knowledge. This aligns with findings from other sectors. Previous studies have indicated intermediate levels of first aid knowledge among cab drivers (21). Although many studies indicate that persons with previous first aid training often have superior knowledge ratings, they may nevertheless see themselves as unprepared or inefficient in real emergency situations (22). In a separate research, 27.1% of participants characterized their first aid knowledge as moderate (23), reinforcing the idea that both the quality of training and knowledge retention are essential for effective emergency response.

Although holding of a first aid certification did not correlate with significantly elevated knowledge scores, certified individuals had more favorable opinions regarding first aid procedures. In our survey, around 20% of participants possessed a valid first aid certification. This implies that although certification by itself may not ensure superior information retention, it may enhance confidence and preparedness to take action. The limited overall perceptions identified in the study highlight the need to improve the accessibility and structure of first aid education. No significant differences in knowledge or attitude ratings were detected about participants' readiness to undergo first aid instruction. Nonetheless, over half (59.6%) indicated a desire to participate in such training. This corresponds with previous research, wherein participants indicated unhappiness with earlier first aid training and stated a want for re-education (24). These observations present a significant potential for public health initiatives to leverage community motivation by enhancing the accessibility and attractiveness of first aid programs. This interpretation is consistent with international evidence: a quasi-experimental study from Indonesia demonstrated that community-based choking first aid education resulted in substantial improvements in laypersons' knowledge, skills, and intervention confidence, underscoring the transformative effect of structured, scenario-based training models in diverse populations (25).

This study enhances the Turkish public health literature by concentrating on the preparation of restaurant staff for FBA events, a subject usually examined in pediatric or clinical contexts. This research examines a high-risk, frequently neglected occupational category that routinely engages with the public in environments where choking incidents are probable, contrasting with other studies that focused on legally obliged professions such as educators or healthcare workers. This study contributes to the limited evidence on the preparedness of non-medical frontline workers to respond to choking incidents by examining their first aid knowledge and attitudes. To our knowledge, it is the first district-based study in Türkiye focusing on restaurant staff in this context. The findings provide baseline data that may inform future workplace training strategies and community-oriented public health initiatives.

Study Limitations

This study has several limitations. First, it was conducted in a single district of Istanbul, which restricts the external validity of the findings and limits their applicability to other regions or restaurant settings. Second, data collection occurred during a single visit to each establishment, and only employees who were present at that moment were included. This may have introduced selection bias, as individuals with different shifts, levels of experience, or varying preparedness may not have been represented. Third, all responses were based on self-report, which is susceptible to social desirability and recall bias, potentially leading participants to overestimate their knowledge or confidence. Additionally, the knowledge assessment instrument—although developed using national guidelines and expert opinion—has not undergone formal psychometric validation, as no standardized tool exists for measuring FBA first aid knowledge. Finally, the study did not incorporate direct observation or practical skill assessment; therefore, the results reflect perceived rather than demonstrated first aid competence.

Conclusion

This study underscores a significant deficiency in first aid readiness among restaurant personnel in addressing FBAO occurrences. Despite operating in high-risk settings where prompt intervention is critical, only a little percentage of participants possessed genuine first aid certification, and an even smaller fraction had previously intervened in choking incidents. Despite over half stating a readiness to undergo training, this has not resulted in sufficient preparedness, highlighting a disparity between intention and actual readiness.

Considering that restaurant staff frequently serve as the initial and only responders in crises, it is essential to incorporate mandatory, scenario-based first aid and basic life support training into occupational safety regulations. Broadening access to this training outside the food service industry—via community-oriented public health initiatives—could also elevate bystander intervention rates and increase survival outcomes in FBAO incidents.

First aid education must be rendered more accessible, consistently updated, and tailored to the requirements of non-healthcare professionals. As rules and norms develop, continuous refresher training for all occupational groups is essential to sustain competency and avert skill deterioration over time.

These findings highlight the necessity of including systematic, ongoing, and pragmatic first aid training within workplace safety rules and comprehensive health education initiatives. Legal certification requirements, bolstered by simulation-based learning, may improve information retention and the confidence necessary for successful action in real-life situations.

This study effectively fills a significant gap in the literature by examining the preparation of restaurant personnel in FBAO circumstances. Future study should investigate obstacles to training access—such as cost, time, and availability—and assess the long-term effects of tailored interventions in both professional and community contexts. Addressing these concerns can enhance the capacity of laypersons as effective first responders, hence improving emergency outcomes and fostering community resilience.

Ethics

Ethics Committee Approval: Prior to the commencement of the study, written approval was obtained from the University of Health Sciences Türkiye Hamidiye Scientific Research Ethics Committee (decision no.: 2023/3, date: 10.02.2023). Throughout the study, the principles of the Declaration of Helsinki were strictly adhered to.

Informed Consent: Informed consent was obtained from all participants prior to their inclusion in the study.

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Footnotes

Authorship Contributions

Concept: M.T.U., F.Y., G.A., H.K., M.N.Ü., G.B., Design: M.T.U., F.Y., G.A., H.K., M.N.Ü., G.B., Data Collection or Processing: M.T.U., F.Y., E.Ç., G.A., H.K., M.N.Ü., Analysis or Interpretation: M.T.U., E.Ç., Literature Search: M.T.U., F.Y., E.Ç., G.A., H.K., M.N.Ü., G.B., Writing: M.T.U., F.Y., E.Ç., G.A., H.K., M.N.Ü., G.B.

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