RESEARCH ARTICLE

The food hygiene practices among workers in restaurants of Wasit Governorate, Iraq

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Abstract

Objectives: To determine the knowledge, attitude and practices related to food hygiene among those working in restaurants.

Method: The descriptive, cross-sectional study was conducted from January 5 to April 30, 2019, within restaurants located in Hay, Kut, Numania, Badra, Azizia and Suwera cities in the Wasit Governorate of Iraq. Those included using simple random sampling technique were food handlers of either gender. Data was collected using a predesigned questionnaire.

Results: Of the 330 subjects from 55 restaurants, 320(96.9%) were males and 10(3%) females. The overall mean age was 31.6±9.5 years (range: 15-55 years). Overall, 193(58.4%) subjects were married, 279(84.5%) had work experience <10 years, 90(27.2%) had professional training, 212(64.2%) had studied up to secondary level, and 113(34.2%) were working as waiters. Of the total, 127(38.48%) subjects correctly described food hygiene, and 197(59.69%) acknowledged the necessity of obligatory periodical check-ups. Hygiene practice scores were poor in 223(67.57%) cases.

Conclusion: The food hygiene knowledge, attitude and practice of food handlers in restaurants of Wasit governorate were found to be poor.

Keywords: Restaurants, Health, Knowledge, Attitudes, Practice, Hygiene, Surveys.

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Introduction

Food hygiene comprises measures and events necessary to ensure the safety of food from production to consumption. In restaurants, food can become contaminated at any time during processing, storage, distribution, transportation and preparation or serving.[1] In Iraq, particularly in popular restaurants, the lack of adequate food hygiene practices can lead to foodborne diseases, especially food poisoning, and sometimes these diseases may cause the death of the consumers.[2] Unhygienic and contaminated food leads to serious contamination problems that affect the consumers' health as a result of the presence of infectious agents or toxic materials. The application of instructions and recommendations of the World Health Organisation (WHO) regarding food hygiene practices along with strict monitoring by the health directorate on hygiene and safety of the food in restaurants will solve the problem.[3] *Salmonella enteritidis, staphylococcus (S.) aureus* and *Escherichia (E.) coli* O157:H7 cause a high risk for food hygiene and safety, especially when handling food because these bacteria represent the contamination sources for hand towels and working equipment.[4] The absence of knowledge among food handlers has been reported regarding temperatures of cooked food, personal hygiene, and the different types of food contaminants. The food handling staff needs many regular training programmes to ensure safety and hygiene in the production of food, especially in popular restaurants due to the increase in the number of customers because of inexpensive meals compared to first-class restaurants.[5] Hygienic practices that involve food safety and hygiene include several aspects, like effective hand-washing and training courses about food safety. In developed countries, like Finland, food handlers must have a food hygiene proficiency certificate to reflect their learning and knowledge of food hygiene and safety.[6] Generally, without active monitoring and appropriate control measures of health administrations on the food handlers, the risk of food-related diseases is elevated. Food handlers who work at restaurants play an important role in the occurrence and transmission of food-borne diseases, with millions of people around the world getting hospitalised due to contaminated food, according to WHO estimates.[7] In Iraq, the distribution of foodborne diseases is unknown because there is no active surveillance system. To the best of our knowledge, no study on food hygiene practices among workers in restaurants has been conducted in Iraq. The current study was planned to fill the gap by determining the food hygiene practices among food-handling workers in an Iraqi governorate.

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Subjects and Methods

The descriptive, cross-sectional study was conducted from January 5 to April 30, 2019, restaurants in Hay, Kut, Numania, Badra, Azizia and Suwera cities in the Wasit Governorate of Iraq. After approval from the ethics review committee of the Community Health department of Kut Technical Institute, Middle Technical University, Iraq, the sample size was calculated using equation cited in literature:[8]

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times \left(d^2 \div z^2\right)\right] + p(1-p)\right]}$$

The sample was raised using simple random sampling technique after permission from the Directorate of Health, Wasit Governorate, and from the owners of the various restaurants. Those included were subjects of either gender associated who were directly involved with the handling of foodstuff.

Data was collected after taking informed consent from each subject using a predesigned questionnaire. The questionnaire was generated in English, and was translated into Arabic after which it was evaluated linguistically and scientifically by a panel of expert comprising four professors and three assistant professors. Subsequent, the questionnaire was pilot-tested at a single restaurant in Kut city.

Information collected related to socioeconomic characteristics, different aspects of food hygiene in restaurants, knowledge, attitude and practices related to food hygiene. The answers were scored by a trained researcher. There were 17 questions. The subjects filled up the questionnaire themselves without any interference from the researchers, and then the answers were compared with the standard answers. Incorrect or 'I do not know' answers were scores 0, while correct answers were scored 1. The total score, as such, ranged 0-17. Total score 0-8.4 was categorised poor, and 8.5-17 was graded as good.

Data was analysed using SPSS 24. $P<0.05$ was taken as significant.

Results

Of the 281 restaurants, 55(19.6%) were included. Of the 330 subjects, 320(96.9%) were males and 10(3%) females. The overall mean age was 31.6±9.5 years (range: 15-55 years) (Figure). Overall, 193(58.4%) subjects were married, 279(84.5%) had work experience <10 years, 90(27.2%) had professional training, 212(64.2%) had studied up to secondary level, and 113(34.2%) were working as waiters (Table 1).

Table-1: Characteristics of the study subjects (n=330).

The essential characteristics of food handlers		Food handlers n (%)
Gender	Male	320 (96.9)
	Female	10 (3.0)
Residence	Urban	298 (90.3)
	Rural	32 (9.6)
Marital status	Married	193 (58.4)
	Single	137 (41.5)
Years of experience	≤10	279 (84.5)
	>10	51 (15.4)
The training courses on food	Trained	90 (27.2)
hygiene practices.	No trained	240 (72.7)
The type of training	Formal	118 (35.7)
	Apprenticeship	212 (64.2)
Educational level	No education	25 (7.5)
	Primary school	76 (23.0)
	Secondary school	212 (64.2)
	Graduate level	17 (5.1)
The role of food handlers in	Cooks' food	88 (26.6)
local restaurants	Waiter	113 (34.2)
	Vendor	35 (10.6)
	Administers	40 (12.1)
	Cleaning role	26 (7.8)
	Multiple jobs	28 (8.4)

Table-2: Food hygiene knowledge and attitude of food handlers (n=330).

The knowledge and attitude responses of food handlers		Food handlers n (%)
Your knowledge that food hygiene	Yes	264 (80)
is an important issue for food handlers	No	66 (20)
Can correctly describe food hygiene	Correct	127 (38.48)
	Incorrect	203 (61.51)
Food hygiene is necessary in food preparation	Yes	234 (70.90)
	No	96 (29.09)
Food hygiene must be performed	Yes	199 (60.30)
every time during all steps from	No	131 (39.69)
food preparation to serving food		
Some diseases like food poisoning	Yes	133 (40.30)
would result from poor food hygiene	No	197 (59.69)
Food hygiene must be applied and	Yes	267 (80.90)
control by national and local health authorities	No	63 (19.09)
Food handlers must be provided	Agree	248 (75.15)
with materials and buildings that	Disagree	82 (24.84)
necessary to availability of food hygiene		
All food handlers must be subjected	Agree	197 (59.69)
to obligatory periodical	Disagree	133 (40.30)

Table-3: Food hygiene practice of food handlers (n=330).

The practice responses of food handlers		Food handlers n (%)
The storage of cooked food overnight	Storage	111 (33.63)
	No storage	219 (66.36)
Always wash hands before handling food	Wash	139 (42.12)
	No wash	191 (57.87)

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Table-3: *continued from previous page*

The practice responses of food handlers		Food handlers n (%)
Always wash hands after toilet	Wash	298 (90.30)
	No wash	32 (9.69)
Do you check up the regular medical	Check	48 (14.54)
general examination	No check	282 (85.45)
Keep the work even when sick	Yes	283 (85.75)
	No	47 (14.24)
Dress at least one protective tool	Wear	220 (66.66)
	No wear	110 (33.33)
Preparing the food in a hygienic place	Yes	153 (46.36)
	No	177 (53.63)
Constantly has the ability to maintaining food hygiene	Able	158 (47.87)
	Unable	172 (52.12)
Receives regular monitoring and multiple	Yes	60 (18.18)
health control visits	No	270 (81.81)

Table-4: Overall score of food hygiene knowledge, attitude and practice of food handlers.

Score	n (%)
Poor = 0-8.4	223 (67.57)
Good = 8.5-17	107 (32.42)
Total	330 (100)

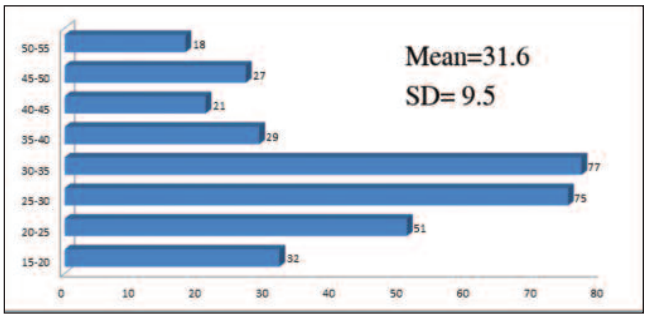

Figure: Age group distribution of food handlers (n=330).

Of the total, 127(38.48%) subjects correctly described food hygiene, and 197(59.69%) acknowledged the necessity of obligatory periodical check-ups (Table 2).

In terms of practice, 139(42.12%) subjects always washed hands before handling food, 298(90.30%) always washed their hands after using the toilet, and 60(18.18%) received regular monitoring and multiple health control visits (Table 3).

Hygiene practice scores were poor in 223(67.57%) cases and good in107(32.42%) (Table 4).

Table-5: Relationship between characteristics of food handlers and their ability to describe food hygiene

The essential characteristics of food handlers		Food handlers (no=330) n (%)	Can correctly describe food hygiene n (%)	Cannot correctly describe food hygiene n (%)	Chi-square test *p*-value
Gender	Male	320 (96.96)	151 (47.18)	169 (52.81)	>0.05
	Female	10 (3.03)	3 (30)	7 (70)	
Residence	Urban	298 (90.30)	138 (46.30)	160 (53.69)	>0.05
	Rural	32 (9.69)	13 (40.62)	19 (59.37)	
Marital status	Married	193 (58.48)	91 (47.15)	102 (52.84)	>0.05
	Single	137 (41.51)	37 (27)	100 (72.99)	
Years of experience	=<10 years	279 (84.54)	217 (78.62)	62 (22.22)	<0.05
	>10 years	51 (15.45)	37 (72.54)	14 (27.45)	
The training courses on food hygiene practices.	Trained	90 (27.27)	61 (67.77)	29 (32.22)	<0.05
	No trained	240 (72.72)	93 (38.75)	147 (61.25)	
The type of training	Formal	118 (35.75)	63 (53.38)	55 (46.61)	<0.05
	Apprenticeship	212 (64.24)	79 (37.26)	133 (62.73)	
Educational level	No education	25 (7.57)	6 (24)	19 (76)	<0.05
	Primary school	76 (23.03)	31 (40.78)	45 (59.21)	
	Secondary school	212 (64.24	83 (39.15)	129 (60.84)	
	Graduate level	17 (5.15)	13 (76.47)	4 (23.52)	
The role of food handlers in local restaurants	Cooks' food	88 (26.66)	54 (61.36)	34 (38.63)	>0.05
	Waiter	113 (34.24)	71 (62.83)	42 (37.16)	
	Vendor	35 (10.60)	14 (40)	21 (60)	
	Administers	40 (12.12)	16 (40)	24 (60)	
	Cleaning role	26 (7.87)	9 (34.61)	17 (65.38)	
	Multiple jobs	28 (8.48)	14 (50)	14 (50)	

There were significant association between years of experience, training courses on food hygiene practices, type of training and educational level of the food handlers with the ability to describe food hygiene (Table 5).

Discussion

In the present study, the food staff comprised 97% males and 3% females. This may be because of the social situation in certain areas in Iraq where jobs in restaurants are considered manly work. In a study in Malaysia, the food staff was 25% males and 75% females[9] In the current study, the residence of respondents was 90.3% in urban areas, which was because all restaurants in the Wasit Governorate were in the cities. Generally, people in rural areas work in the agriculture sector and there is hardly any restaurant seen in rural areas as people there culturally prefer to stay away from restaurants. A study of food handlers employed in King Saud University, Riyadh, had people from different nationalities, like Arabs (23%), Indians (22%), Filipino (19.5%), Bengali (18.4%) and Nepalese (17.2%).[10]

The majority of food handlers (84.5%) in the current study had <10 years of relevant work experience, while in another study, most food handlers (61.3%) had 3 years of experience in the food service industry.[11] The current results showed that 72.7% of food handlers in restaurants were without proper training. This is a shortcoming of the health system that allows people to work without professional training. In the present study, formal training had been received by 35.7% subjects, as defined by the Iraqi government, while training through apprenticeships is not approved for food-related occupations. There was a clear lack of follow-up by the health administration about the type of training the food handlers had in the study. Health systems are supposed to determine the type and duration of the training, as well as grant work certificates to those who complete the training course in order to allow only trained individuals to work in food-related industries, including restaurants. Learning on the job leads to the occurrence of errors that often have serious repercussions. In one study, 82.8% food handlers had learned through apprenticeship.[12] In the present study, the educational level of restaurant workers varied greatly. This sometimes gets reflected in the understanding of health instructions and adherence to such instructions. The problem arises when the employer is not educated and does not know the danger of neglecting and ignoring instructions and conditions related to food or work environment, which can cause a danger to the health of consumers. In the current study, there were some people who were neither educated nor trained, making it an even more complex problem. An earlier study also showed that the educational levels of food handlers were different.[13] Regarding the role of food handlers in local restaurants, some persons were performing multiple jobs in restaurants. The overlapping of work and duties is forbidden in restaurants and food factories due to the risk of transferring pathogens or harmful and toxic materials. For example, it is not permissible for a sanitation worker to prepare or serve food. One study showed there was no overlapping of work among food handlers.[14]

In the present study, 61.51% subjects could not correctly describe food hygiene. This was perhaps because of untrained workers and negligent employers.

In the present study, 85.45% food handlers did not have regular medical general examination. This proves that workers did not have a healthy culture to protect themselves or their clients, as well as the lack of follow-up and punishment from the relevant part of the local administration.

The current results also showed that 81.81% food handlers had experienced any direct check by the inspection unit of the health administration, which, again, is a major defect in the supervisory mechanism.

In the present study, 32.42% subjects had a good score about different food hygiene categories, a finding much lower than those reported by studies.[15] However, earlier studies have also shown that the food handlers were not implementing their knowledge into work practice in different food industries.[16,17]

The ability to describe food hygiene had no significant association with any of the key characteristics of food handlers, like gender, residence, marital status, and the role of the food handlers in local restaurants in the current study, while some factors, like years of experience, training in food hygiene procedures, type of training, and educational background, did have a significant association.

Conclusion

The health system in the Wasit Governorate was found to be deficient in monitoring the implementation of health measures by restaurant workers and owners. The knowledge, attitude and practice of food handlers in restaurants of the governorate was poor, and the majority of food handlers lacked fundamental knowledge of food hygiene.

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