

Hygienic Practises Among Food Handler with Relation to Recurrent Infections, Frequent Complaints and Positive Stool Examinations

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Abstract

Background: All those involved in the handling and preparation of food have a significant role in the effort to reduce the prevalence of food borne diseases. Thus keeping food handlers healthy can contribute a very accountable role in preventing food contamination during preparation and distribution. **Objectives:** To study the hygienic practices pattern among food handles who work at food facilities in Dubai with relation to frequent infections, complaints and positive stool examinations. **Methodology:** A cross sectional study was carried out. The study was conducted in Dubai city, the second largest city in U.A.E. The study was carried out in Dubai Municipality clinic which is the only authorized place for issuing medical fitness card for food handlers in Dubai. The study included food handlers attending Dubai municipality clinic for issuing medical fitness card. The study sample was 425 food handlers with 100% response rate. The data was collected through face-to-face interviews, as well as laboratory stool test were carried out for all participants. **Results:** Those reporting complaints had lower general and personal hygienic practices score but slightly higher cooking hygienic practices score (68.71, 83.07 and 90.81 respectively) than those without complaints (72.46, 89.09 and 89.77 respectively). No significant differences in the mean hygienic practices among parasitic infection group whether current or recurrent. For both recurrent infection with personal hygienic practices $P=0.435$, general Hygienic practices $p= 0.589$ and cooking hygienic practices $p= 0.096$, while the positive stool examination with personal hygienic practices $p= 0.536$, General Hygienic practices $P= 0.504$ and Cooking hygienic practices $P= 0.456$. **Conclusion:** Hygienic practices has definitely related to food handler recurrent infection, frequent complaints and positive stool examinations, though the relationship was not strong reflecting good hygienic standards. **Recommendations:** Re-certification, to keep up with new food technology and safe food-handling practices, and to ensure the safety of foods for consumers. It is also important to monitor food handling practices and to develop science-based food-safety inspection guidelines.

Keywords

Hygienic Practice, Food Handles, Infection, Complaints, Dubai

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1. Introduction

Food handlers i.e. any person who handles food, regardless whether he actually prepares or serves it, play an important

role in the transmission and, ultimately, prevention of food borne disease. (1) Information regarding food handlers' practices is a key to addressing the trend of increasing food borne illnesses. The prevention of food borne disease

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requires the cooperation of all those who interact in the food chain. (2) Many studies pointed out that the factors most commonly associated with food borne illness outbreaks include food purchases from unsafe sources, inadequate cooking or reheating, holding at room temperature in advance service, cross-contamination from other foods or food contact surfaces, poor personal hygiene, or improper food handling practices. (3, 4) In Korea, 56 % of the food borne outbreaks was caused by the microbial infection. (5)

In the case of microbial substances, time and temperature control and prevention of cross contamination could be effective methods for the prevention of food borne illness. Therefore the reinforcement of safety education for food handlers and manager in foodservice establishments is on the rise. Having small scale facilities and capital (6), low education/low technical skill of employees (7), and a high turnover rate of employees, effective safety training programming should be developed. The most commonly reported factors contributing for food borne disease outbreaks are poor personal hygiene of food workers, contamination of potentially hazardous foods with pathogens, leaving food at room temperatures for an extended period of time, and insufficient time and/or temperature during initial cooking or reheating. (8)

The cause of the majority of these outbreaks (88%) are microbial pathogens contaminating food items prepared at licensed facilities, mainly from restaurants, school cafeterias, and nursing homes. (8) Routine inspections of food service facilities have been employed as regulatory tools to enforce sanitary codes and reduce the risk of food borne outbreaks. (9) Failure to meet the regulatory standards is assumed to increase the risk of food borne disease. Certainly it is not uncommon to find food borne outbreaks associated with facilities with a history of regulatory failure. (10) Poor food safety practice also has been identified as one of the reasons for an increase in food borne disease outbreaks found in schools, colleges, and universities in the U.S. (11)

In addition to enforcing regulatory inspection programs, many health departments try to ensure appropriate food safety practices through the use of mandatory or voluntary food safety and hygiene training and certification programs for food personnel. However, the literature is inconclusive about the effectiveness of such training programs for improving food safety and protecting consumer health. (12) The World Health Organization (WHO) reports that up to 30% of individuals in developed countries acquire illnesses due to food and water consumption. (13) This estimate is supported by U.S., Canadian, and Australian public health data. (14-16)

Food can be mishandled at any stage such as during preparation, handling, or storage. Studies show that many

consumers are inadequately informed about measures needed to prevent food borne illness in the home. (17) Food borne illness has been associated with improper storage or reheating, with food stored inappropriately and with cross-contamination. All those involved in the handling and preparation of food have a significant role in the effort to reduce the prevalence of food borne diseases. (18) Thus keeping food handlers healthy can contribute a very accountable role in preventing food contamination during preparation and distribution.

2. Objectives

To study the hygienic practise pattern among food handles with frequent infections , complaints and positive stool examinations working at food facilities in Dubai

3. Methodology

A cross sectional study was carried out. The study was conducted in Dubai city, the second largest city in U.A.E. The study was carried out in Dubai Municipality clinic which is the only authorized place for issuing medical fitness card for food handlers in Dubai. The study included food handlers attending Dubai municipality clinic for issuing medical fitness card. An appropriate sample size was calculated according to the sample equation obtained by using computer program Epi Info Version 6.04. the minimum sample size required was 420 food handlers. The study sample was 425 food handlers with 100% response rate. A systematic random sample procedure was carried out. Considering that filling the questionnaire was taking about 20-30 minutes, every 10th person was involved to select nearly 10 food handlers per day until accomplishment of the required sample size. The data was collected through face-to-face interviews, as well as laboratory stool test was carried out for all participants.

4. Results

Table 1 explains that those reporting complaints had lower general and personal hygienic score but slightly higher cooking hygienic score (68.71 + 6.06, 83.07 + 5.25 and 90.81 + 9.63 respectively) than those without complaints (72.46 + 7.64, 89.09 + 7.83 and 89.77 + 6.36 respectively).

5. Discussions

It was found that recurrent infection along with frequent complaints and positive stool examination outcome is affected by hygienic practices (personal, general and cooking) yet the difference was not statistically significant $P > 0.05$.

This finding can be explained by good hygienic standards including training, monitoring and applying of percussion measures.

Other environmental factors didn't show significant association with parasitic infection. In contrast, Thailand study (19) showed of the total 20 analyzed factors, only three revealed significant correlations with intestinal parasitic infections which were low annual income, having inadequate toilets and eating undercooked food.

Stepwise logistic regression analysis of factors predicting parasitic infection showed that the most significant predictors were sex, monthly income and number of toilets in homes. Those at higher risk of parasitic infection were males (3 times that of emales), with income of <1000, 1000-1500 or 1500-2000 AED (about 2 times that of the 2000+ AED income category) and those with one toilet at homes (2 times that among those with two or more toilets). A study done in Khartoum, Sudan, (20) found that no association was detected between the frequency of parasite infection and age, sex, occupation, duration of work and place of work. This illustrates the equal exposure to the infection and suggests an effect of environmental conditions on infection. Another study in southern Brazil (21) showed the occurrence of entero-parasites according to the sex, age group, degree of education, and salary level of the food handlers. The presence of at least one species of parasites in men was significantly

different from that in women. There was no association between age group, degree of education, or salary level of the food handlers and the presence of parasites, but higher occurrences were observed in individuals younger than 18 years, with basic education, and with a relatively low income, up to three minimum wages.

The occurrence of parasites was associated with occupational category. Bakers and confectioners and school food servers contributed most to this association. But study done in Ethiopia (22) revealed that high prevalence of intestinal parasites is largely due to poor personal hygiene practices and environmental sanitation, lack of supply of safe water, poverty, ignorance of health-promotion practices, and impoverished health services. The poor hygiene practice might have been confounded by the fact that most food-handlers were individuals from the lower socioeconomic class with low level of education.

Tables 2 and 3 didn't show significant differences in the mean hygienic practices among parasitic infection group whether current or recurrent. For both recurrent infection with personal hygiene $P=0.435$, general Hygiene = $p= 0.589$ and cooking hygiene $p= 0.096$ while the positive stool examination with personal hygienic practice $e p = 0.536$, General Hygienic practice $P = 0.504$ and Cooking hygienic practice $P= 0.456$

Table 1. Hygienic practices of food handlers by complaints, Dubai 2010-2011.

Complaints	No.	Personal hygienic practices		General hygienic practices		Cooking hygienic practices		Total score	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Yes	114	68.71	6.06	83.07	5.25	90.81	9.63	79.76	4.87
No	311	72.46	7.64	89.09	7.83	89.77	6.36	82.47	5.26
Mann-Whitney test		6.53		10.81		2.79		5.94	
P		0.000		0.000		0.005		0.000	

Table 2. Recurrent infection and hygienic practices of food handlers in Dubai, 2010-2011.

Recurrent infection	No.	Personal hygienic practices		General hygienic practices		Cooking hygienic practices		Total score	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Yes	311	71.85	6.90	87.74	6.22	90.24	7.71	82.04	5.07
No	114	70.37	8.66	86.75	10.76	89.52	6.39	80.94	5.80
Mann-Whitney test		0.78		0.54		1.66		1.74	
P		0.435		0.589		0.096		0.083	

Table 3. Fecal examination and hygienic practices of food handlers in Dubai, 2010-2011.

Fecal examination	No.	Personal hygienic practices		General hygienic practices		Cooking hygienic practices		Total score	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Positive	9	73.70	4.26	86.67	6.67	89.17	5.15	82.17	3.51
Negative	416	71.40	7.48	87.49	7.73	90.07	7.42	81.73	5.32
Mann-Whitney test		0.62		0.67		0.75		0.16	
P		0.536		0.504		0.456		0.871	

6. Conclusion

Hygienic practise has definitely related to food handler

recurrent infection, frequent complaints and positive stool examinations, through the relationship was not strong reflecting good hygienic standards.

Recommendations

Re-certification, to keep up with new food technology and safe food-handling practices, and to ensure the safety of foods for consumers. It is also important to monitor food handling practices and to develop science-based food-safety inspection guidelines.

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