

# Knowledge Attitude & Practice among Food Handlers of QAMC & BVH Bhawal Pur

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food hygiene among the food  
handlers of canteens in  
*BVH/QAMC*

## **ABSTRACT**

### **Introduction:**

Food is an important basic necessity. It's procurement, preparation and consumption is vital for the sustenance of life. The safety and quality of food, both are the key objectives for any country. Food borne illnesses have an impact on both developing and developed countries. Ensuring safe food handling and preparation is of paramount significance. This study seeks to examine the awareness of food handlers' personal hygiene knowledge on food handling practices.

### **Objective**

The aim of this study is to assess the knowledge, attitude and practices regarding

### **Study design**

Cross sectional descriptive study.

### **Study duration:**

5 months<sup>(july .</sup>  
2017 - december  
2017)

### **Setting:**

Bahawal Victoria Hospital (*BVH*)  
and Quaid-e-Azam Medical College  
(*QAMC*) Bahawalpur.

**Sample size:** Due to limited  
resources, sample size of **100** is  
taken.

### **Sampling technique**

Non probability, convenience  
sampling

## Data collection

### protocol:

Data is collected through a preformed questionnaire. There were 2 parts of the questionnaire. First part comprises of questions relating to knowledge, attitude and practices of food handlers. Second part comprises of the information observed by the researchers, regarding the hygiene of the food handlers and their surroundings.

### Data analysis:

Data was analyzed on SPSS worksheet. All results were presented in tabulated forms.

### Results:

Mean age of 100 food handlers was 32 years. Majority were males (93%) and the maximum number of participants in the age group of 21-30 years (40.4%). Majority of the food handlers had poor knowledge regarding food borne diseases (64%). Most of the participants have the attitude of serving hot food

(89%). All (100%) the food handlers wash hands before food preparation while (58%) use gloves for food preparation. Majority of the food handlers clean their workplace twice a day (57%). There is adequate protection of food from flies in most of the canteens (85%). Most of the food handlers had clean hands (69%) and finger nails (84%).

### Conclusion:

Majority of the study participants have poor knowledge related to food borne diseases but positive attitude and practices towards food hygiene while food preparation.

### Key words:

Food hygiene, Food handlers, Food borne diseases

## INTRODUCTION

**Food**, which is defined as:

**“An early article - manufactured, sold or represented for the use as an edible or drink for human**

consumption” OR “any item, that enters into or is used in composition, preparation or preservation of any food or drink”,

is an important basic necessity. Its procurement, preparation and consumption is vital for the sustenance of life.<sup>1</sup>

**Food handler** is defined as:

**“A person in food trade or someone professionally associated with it, such as an inspector, who in his routine work comes into direct contact with food, in the course of production, processing, packaging or distribution.”<sup>2</sup>**

Accordingly, food handlers with poor personal hygiene and lack of awareness of important issues in preventing food borne diseases, working in food establishment could be a potential source of many intestinal helminthes, protozoa and enterogenic pathogens.<sup>3</sup> There are

more than **250** food borne diseases, which are either caused by:

**Bacteria** - (Clostridium, Botulinum, Escherichia coli, Salmonella, Listeria, Vibrio cholera);

**Viruses** - (Enterovirus, Hepatitis. A virus, Rotavirus, Norvo virus);

**Parasites** - (E..histolytica, Criptosporidosis, Giardia, Trichinosi s).<sup>4</sup>

The World Health Organization (WHO) estimated, that in **developed countries** upto 30% of population suffer from food borne diseases each year, whereas in **developing countries** upto 2 **million deaths** are estimated per year.<sup>5</sup> Moreover in **developing countries** upto an estimated **70% of cases of diarrheal diseases are associated with consumption of contaminated food.**<sup>6</sup> WHO estimated **16 million new cases and 600,000 deaths by typhoid fever** each year.<sup>5</sup>

Legislation governing food safety enacted in Pakistan are **worst**

according to **Pakistan pure food ordinance 1960.**<sup>7</sup> There is no such inspection of food preparatory processes or of food handlers that either they are observing food hygiene practices or not. So due to current status of the issue, a research was conducted in **Quaid-e-Azam Medical College, hostels & Bahawal Victoria hospital canteens.** The aim of study was to assess the current knowledge, attitude & practices regarding food hygiene among the workers of college and hospital canteens and to procure information about various foods handling practices and spread awareness about the prevention of food borne disease. The required data was obtained by pre-designed questionnaire. The data collection includes - **Food handling practices, Environmental and Personal hygiene, Knowledge of food hygiene and safety measures taken for controlling and preventing food borne illness and Incidence of food borne diseases & their attitude towards food hygiene.** The personal hygiene was assessed by observing, **general cleanliness, general appearance of clothes & nails condition.** Also

health practices such as **acquisition of cooking skills, cleanliness of place of preparation, methods of washing utensils and preservation** observed by the food handlers were noted in the study. This study will tell us about the current status and by this way proper steps can be taken to reduce the morbidity and mortality associated with lack of knowledge, attitude and practice of food hygiene among the food handlers.

## **LITERATURE**

### **REVIEW**

A Cross sectional study was carried out among food vendors in educational intuitions of **Ghana** in **June 2013.** Data was collected by Questionnaires, interviews and observation during the interviews from 60 vendors of 20 schools. Study showed that food vendors in educational intuitions adhere to hygienic practices like **regular examination (93%), people serving food have hygiene (63%)** etc. **The training instead of education had significant association to hygienic.**

( $P < 0.05$ ). The study indicates that efforts should be geared to develop learning program for food vendors.<sup>8</sup>

Another descriptive cross-sectional study was carried out in **Jos, Plateau state, North Central Nigeria in March, 2017**. The study involves **500 food vendors of primary schools**. The mean age of food handlers was  **$25.8 \pm 5.3$  years**. **106 (60.9%) had good knowledge**. The study also showed that the **level of knowledge and**

**practice need improvement through training.**<sup>9</sup>

A same type of descriptive cross-sectional study was carried out among two **secondary school students and food vendors in Johar Bahru, Johar, Malaysia in March, 2012**. Data was collected by questionnaires & interviews. **339** students & vendors were involved.

Study showed that **knowledge and practice among vendors and students were good for both schools (79.1%)**. Results showed **equal knowledge and practice of food hygiene in males and females**. **Correlation b/w food safety and knowledge indicate small positive correlation** with ( $r = 0.148$ ,  $n = 221$ ,  $p < 0.05$ ) for Sekolah Tingii Arab Maahad and

( $r = 0.053$ ,  $n = 178$ ,  $P < 0.5$ ) for Sekolah Menengah Kebangsaan Gelang Patah.<sup>10</sup>

Similar to this descriptive cross-sectional study, a study was carried out among **food handlers in the hospitality establishment of Peshawar city in January, 2012**. **250 food handlers** were involved from **lower, middle and upper tier restaurants**. Results showed that **hand washing facilities are good in upper restaurants (100%), 94% in middle and 11% in lower restaurants**. It was concluded that **majority of food handlers in**

lower restaurants do not wash their hands before and after handling of food leading to contamination and food-borne diseases.<sup>11</sup>

On the same pattern, a descriptive cross-sectional study was carried out among food vendors at Rawalpindi, the fourth largest city of Pakistan in August, 2017. 223 vendors from six clusters of Rawalpindi were selected. Majority of them showed unhygienic food preparation and maintenance. 80% of stalls were exposed to flies. 75% used tap water, 98% handled food with bare hands. 80% were contaminated with microbes, insects, dust particles and food coloring.<sup>12</sup>

Another cross-sectional study was carried out among 100 vendors during the chain of street food productions Florianopolis, Brazil in October 2015. The study investigated demographic profiles of street vendors and hygiene practices used for production of food. 43 were males. 12% vendors

did not provide ice, 95% did not sh hands during food handling, and 33% did not wash their hands at all. 24% washed their hands with water. The study indicated that need for improvement of environmental conditions to prevent food-borne diseases.<sup>13</sup>

In Kuala Pilah, Malaysia in April 2012, a descriptive cross-sectional study was carried out among food handlers to determine food hygiene in restaurants of Kuala Pilah, Malaysia. 64 handlers were involved. Results showed that handlers had excellent knowledge towards food hygiene. Educational level influenced knowledge and practice of food hygiene. Research results showed satisfactory levels of practice of some aspects of hygiene measurers like refreezing food items & clean working area.<sup>14</sup>

In Malaysia, another cross-sectional study was carried out for assessment of food safety and microbiological hand hygiene of food handlers in Kuala Lumpur, in January 2017. The study

involved **85 food handlers**. Hand-swabs were tested for aerobic count, coliforms, E. coli etc. The food handlers had **moderate levels of food safety knowledge (61.71%) with good attitude (51.9/60) and self-reported practices (53.2/60)**. **65% food handlers** had a total **aerobic count of  $\geq 20$  CFU/cm<sup>2</sup>**. Study suggested that food handlers had adequate food safety knowledge.<sup>15</sup>

Another cross-sectional study was carried out for hygienic practices among **food handlers in Dubai in June 2015**. **425 respondents** using questionnaires and interviews were involved. Overall hygienic practices had a **mean  $\pm$  SD Value of  $81.74 \pm 5.29$**  with **lowest score of personal hygiene and highest for cooking**. **82% of handlers received adequate food training**. Those **working in restaurants or as housemaid** and not trained were more likely to had **bad hygiene score**. **The prevalence of parasitic**

**infections** among handlers were **2%**, in which males are more affected.<sup>16</sup>

A community-based cross-sectional study was carried out among **food handlers in plant sector Sri Lanka in February 2016**. **375 food handlers from 18-63 years** were enrolled of which **88% of them were female**. **59.6% of participants had good**

**knowledge and good medical practices**.<sup>17</sup>

## OBJECTIVE OF THE STUDY

The **OBJECTIVES** of the study are:

- 1- To assess the current **knowledge, attitude and practices** regarding food hygiene among food handlers of canteens of **Bahawal Victoria Hospital and Quaid-e-Azam Medical College Bahawalpur**



## 2- OPERATIONAL DEFINITIONS

### 3- Food handler:

- 4- A person, who works in a food facility and performs any duty that involves preparation, storage or service of food.

### Good knowledge:

Knowledge of each participant was assessed by asking three questions related to food hygiene (if they had heard about food borne diseases, the transmission of food borne diseases and if their prevention is possible). Due to simplicity of questions, on judgmental basis it was assumed that any participant who answered all three questions correctly was considered to have good knowledge.

### Poor knowledge:

A participant who answered either all three, any two or any one question related to food hygiene incorrectly was considered to have poor knowledge.

## RESEARCH

## METHODOLOGY

### Study design:

Cross sectional descriptive study

### Settings:

Eight canteens in Bahawal Victoria Hospital and Quaid-e-Azam Medical College were included in the study. Fatima Jinnah Hall canteen, Johar Hall canteen, Ghazali Hall canteen, Faisal Hall canteen, Attique Hall canteen, Girls Hostel canteen, QAMC college canteen, Bahawal Victoria hospital canteen.

### Duration:

Study was completed in 6 months starting from 1<sup>st</sup> July 2017 to 1<sup>st</sup>



*December 2017.*

### **Sample size:**

Sample size was taken as *100* due to economic and time constraints.

### **Sampling technique:**

Target population was all the food handlers working in eight canteens of QAMC/BVH i.e Fatima Jinnah Hall canteen, Johar Hall canteen, Ghazali Hall canteen, Faisal Hall canteen, Attique Hall canteen, Girls Hostel canteen, QAMC college canteen, Bahawal Victoria hospital canteen.

All the workers of each canteen were included in the study. Nineteen (19) workers from Fatima Jinnah Hall canteen, 14 workers from Johar Hall canteen, 7 workers from Ghazali Hall canteen, 14 workers from Faisal Hall canteen, 6 workers from Attique Hall canteen, 25 workers from Girls Hostel canteen, 3 workers from QAMC college canteen, 12 workers from Bahawal Victoria hospital canteen were included in the study on the basis of their accessibility and

proximity to the researchers by convenience sampling technique.

### **Ethical issues:**

Informed consent was taken from each participant. Identity of participant remained confidential.

### **Sample selection**

#### **criteria:**

All food handlers who were willing to participate were included in the study.

### **Data collection**

#### **procedure:**

Data was collected by using preformed questionnaire comprising of two parts. First part contains data related to the demographic profile of the participants (age, gender, educational status, place of canteen) and second part consists of questions related to knowledge, attitude and practices of food handlers regarding food hygiene. Three questions were used to assess

the knowledge regarding food hygiene which included whether the participant had ever heard about food borne diseases, the way food borne diseases are transmitted and can these be prevented. Two questions were asked about attitude related to food hygiene (whether the participant served hot food and if they consult a doctor when ill). Five questions were asked to assess the practices regarding food hygiene (whether the participant uses gloves for food preparation, wash hands before food preparation, refrigerate leftover food, check the expiry date on food items before preparation and the number of times they clean the place). 4 questions were related to the observed conditions (adequate protection of food from flies, dust, dishing out food with bare hands, gloves or using a spoon, the presence of debris on vendor's hand, finger nails clean or not).

## **Data analysis:**

Data was analyzed through SPSS. Mean was calculated for age.

Frequencies and percentages were calculated for gender, educational status, place of canteen, participants' training regarding food preparation, if participants had heard about food borne diseases, their source of information, the way food borne diseases are transmitted and if they can be prevented, whether the participant served hot food, consult a doctor when ill, whether the participant uses gloves for food preparation, wash hands before food

preparation, refrigerate leftover food, check the expiry date on food items before preparation, the number of times they clean the place, whether there is adequate protection of food from flies, dust,

method of dishing out food, presence of debris on vendor's hand, cleanliness of finger nails of food handlers.



**Table No. 01: DEMOGRAPHIC PROFILE OF THE**

**PARTICIPANTS (N=100)**

		F.J hall	19
		Girls hostel canteen	25
		College canteen	3
		Hospital canteen	12
		Attique hall	6
		Total	100
<b>AGE of the Respondents</b>	Frequency		
11-20	10		
21-30	40		
31-40	21		
>40	28		
Total	100		

**Mean age of the respondents:**

**32 years**

**GENDER of the**

	Frequency
<b>Respondents</b>	
Male	93
Female	7
Total	100

**EDUCATION of the**

	Frequency
<b>Respondents</b>	
Primary	21
under Matric	39
Matric	18
Above matric	7
Illiterate	15
Total	100

**PLACE the Canteen**

	Frequency
Johr hall	14
Ghazali hall	7
Faisal hall	14

Percent	Cumulative Percent
10.0	10.1
40.0	50.5
21.0	71.7
28.0	100.0

Percent	Cumulative Percent
93.0	93.0
7.0	100.0

Percent	Cumulative Percent
21.0	21.0
39.0	60.0
18.0	78.0
7.0	85.0
15.0	100.0

Percent	Cumulative Percent
14.0	14.0
7.0	21.0
14.0	35.0
19.0	54.0
25.0	79.0
3.0	82.0
12.0	94.0
6.0	100.0

**Table No. 02: KNOWELDEGE OF THE PARTICIPANTS (N=100)**

<b>Knowledge of food borne disease</b>	Frequency	Percent	Cumulative Percent
Good	36	36.0	36.0
Bad	64	64.0	100.0
Total	100		
<b>Transmission of the disease</b>	Frequency	Percent	Cumulative Percent
contaminated hands	62	62.0	62.0
contaminated water	23	23.0	85.0
Others	5	5.0	90.0
Don't know	10	10.0	100.0
Total	100		
<b>Is prevention possible</b>	Frequency	Percent	Cumulative Percent
yes	96	96.0	96.0
no	4	4.0	100.0
Total	100		

**Table No. 03: ATTITIDE OF THE PARTICIPANTS (N=100)**

**Do you serve hot food?**

	Frequency	Percent	Cumulative Percent
yes	89	89.0	89.0
no	11	11.0	100.0
Total	100		

	Frequency	Percent	Cumulative Percent
<b>Do you consult doctor</b>	93	93.0	93.0
<b>when ill?</b>	7	7.0	100.0
Total	100		

yes

no

Total



**Table No. 04: PRACTICE OF THE PARTICIPANTS (N=100)**

**Do you use gloves for food**

<b>preparation?</b>	Frequency	Percent	Cumulative Percent
yes	58	58.0	58.0
no	42	42.0	100.0
Total	100		

**Expiry date checking before**

<b>preparation?</b>	Frequency	Percent	Cumulative Percent
yes	79	79.0	79.0
no	21	21.0	100.0
Total	100		

**Refrigerator use for left over**

<b>food?</b>	Frequency	Percent	Cumulative Percent
yes	64	64.0	62.1
no	36	36.0	35.0
Total	100		

**No of times work place is**

<b>cleaned?</b>	Frequency	Percent	Cumulative Percent
once before starting the work	9	9.0	9.0
daily at start & end of the day	57	57.0	66.0
more than 2 times	34	34.0	100.0

**Do you wash hands before food** 100

preparation?	Frequency	Percent	Cumulative Percent
yes	100	100.0	100.0
no	0	0.0	
Total	100		

**Table No. 05: OBESERVED CONDITIONS OF PARTICIPANATS (N=100)**

<b>Adequate protection of food</b>	Frequency	Percent	Cumulative Percent
yes	85	85.0	85.0
no	15	15.0	100.0
Total	100		
<b>Dishing out food?</b>	Frequency	Percent	Cumulative Percent
Bare handed	44	44.0	44.0
Gloved hands	6	6.0	50.0
Spoon/handle	50	50.0	100.0
Total	100		
<b>Presence of debris on food?</b>	Frequency	Percent	Cumulative Percent
Yes	31	31.0	31.0
no	69	69.0	100.0

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Total	100		
<b>Finger nails cleanliness</b>	Frequency	Percent	Cumulative Percent
Clean	84	84.0	84.0
Unclean	16	16.0	100.0
Total	100		

## **RESULTS OF THE STUDY**

In the study, we conducted, **100** food handlers working in canteens of

Bahawal Victoria Hospital/Quaid-e-Azam Medical College (BVH/QAMC) were included. The **mean age** of the participants was **32 years**. Out of 100 participants, **93(93%) were males** and **7(7%) were females**. **10.1%** of the participants were in the **age group of 11-**

**20 years** , **40.4%(40)** were in the age group of **21-30 years**, **21% (21)** were in the age group of **31-40 years** while **28% (28)** of the participants were in the ages of **>40 years**. When participants were asked about their **education**, it was

revealed that **15%** had **never been to school** for education, **21%** had received **primary education**, **18%** had done **matric** while only **7%** had education **above matric**. The participants were taken from **8 different canteens of BVH/QAMC**: **14(14%)** participants each from **Johar hall** and **Faisal hall**, **7(7%)** from **Ghazali hall**, **19(19%)** from **Fatima Jinnah hall** and **6(6%)** from **Attique hall**. In addition, **25 (25%)** participants were from **girls' hostel canteen**, **12(12%)** from **hospital canteen** and **3(3%)** from **college canteen**.

When the participants were asked if they had **heard about food borne diseases**, **36%** had **good knowledge** of food borne diseases while **64%** had **poor**

**knowledge**. **96%** of the participants thought that **prevention of food borne diseases is possible** while **4%** thought that it was **not possible**. **62%** of the participants believed that **transmission** of the diseases takes place via **contaminated hands**, **23%** believed it is via **contaminated water**, **5%** thought via **other methods**, while **10%** **did not know** how transmission takes place. Assessing the attitude of the food handlers, **89%** of the participants **serve the food hot** while **11%** **serve it cold**. **93%** of the participants think it **necessary to consult a doctor when ill** while **7%** **do not prefer** to go to a doctor.

When the participants were questioned regarding their food handling practices, **58%** claimed they **use gloves** for food preparation while **42%** said they **do not**. **79%** of the participants have the **practice of checking the expiry date** of the ingredients before food preparation whereas **21%** **do not** check the expiry date. **All the participants said that they wash their hands before food**

preparation. **64%** of the participants store the leftover food in the refrigerator while **36%** don't use a refrigerator. All the food handlers clean their work place, **9%** among them clean it once a day, and **57%** twice a day while **34%** clean their work place more than 2 times a day.

Observed conditions of the hygiene of the participants were assessed. **84%** had clean finger nails while **16%** had unclean nails. **31%** of them had food debris on their hands while **69%** had clean hands. **44%** of the participants were dishing out food using bare hands, **6%** were wearing gloves while dishing out food whereas **50%** were using a spoon. **85%** of the food handlers had means for adequate protection of food from flies while **13%** did not have adequate protection of food.

## **CONCLUSION**

**Positive attitude & practice** is reported by a great majority of food handlers, who agrees that wearing caps, protective

gloves and adequate clothing reduce the risk of food contamination. They know that food handling relates to the food safety and if it is ignored i.e. Improper cleanliness or storage, it may be hazardous to the health. One factor which is observed in them is the **poor knowledge & less awareness** among the food handlers. It is **because of the fact that most of them are uneducated**. So, it is necessary that the food handlers ought to be educated about the importance of cleanliness, good food hygiene & personal hygiene measure like washing hands before touching food or wearing gloves while distributing the food during their work. It is an individual's behavior or practice which dependent on their knowledge and by educating them will lead to change in attitude and consequently change in practice.

## **DISCUSSION**

This study was done in Quaid-e-Azam medical college and BV hospital

Bahawalpur's canteen to assess the knowledge, attitude and the level of practice of food hygiene among food vendors working there. In this study, the respondents were mainly the males (93.0%) within the age group of 21-30 (40.0%) and minimum were found below 20 years of age (10.0%). Studies conducted at national and international level also affirms that maximum food handlers are in the young age group.<sup>1</sup>

The education level of the respondents was not good. Majority of the food handlers working in QAMC & BVH were under matric (39.0%). 15% were totally illiterate. A research conducted in Hyderabad showed the similar results where 31.3% food handlers were illiterate and overall education level was also found to be very low. Only a few were literate or above matric.

But irrespective of the education, most of the respondents had good practice and attitude. 100% of food handlers washed their hands before handling the food as was found during a study in south Africa 2007 where it was claimed that 94% of

the food handlers washed their hands during food processing.<sup>18</sup>

In this study a positive practice was observed about using gloves during food handling. Similar to the study in Malaysia where 52.3% always used gloves during food handling, 58.0% food handlers used gloves and threw them after removal. When personal hygiene was assessed it was found that 16% food handlers had long, unclean nails but in comparison to our results a study done in South Africa reported only 6% kept their finger nails long and unclean.<sup>18</sup> As concerns about knowledge, 49.0% acquired their knowledge from mass media. 62.0% believed that transmission of food born disease occur through hands but overall it was found that the 64% participants had bad knowledge about the food hygiene which clearly tells that level of knowledge is significantly low as compared to the level of knowledge of participants found in study conducted by Zain MM et al; which reported that 83.3% of food

handlers had good knowledge about food hygiene.<sup>3</sup>

So at the end by comparing with the studies conducted nationally and internationally our study shows that the knowledge of food vendors working here is not good as compared to others at different places but attitude and practices is good.

## **RECOMMENDATION**

**Providing effective knowledge** to food handlers regarding food hygiene and personal hygiene will help prevent food-borne diseases.

There should be a **supervising authority** that regularly monitors the food quality, hygiene of food handlers and the environment where food is made.

**Regular medical checkups** of food handlers must be done.

## **LIMITATIONS OF**

### **THE STUDY**

The sample size was too small to come to definitive results.

The food handlers were not so cooperative and honest in their answers.

The non-probability sampling technique used is not so accurate as compared to probability sampling technique; hence the results may not be too valid.

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