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# Knowledge, attitude and practice of people about foodborne outbreak in Isfahan city, Iran

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### ABSTRACT

This study was conducted after water scarcity and droughts in recent years in Isfahan Province, Iran. The aim of the study was to compare peoples' knowledge, attitude, practice and other risk factors toward foodborne poisoning. A knowledge, attitudes, and practice (KAP) survey study was conducted from January to December 2013 enrolling 580 subjects who were referred to health centers for health care, anonymously (response rate: 100%). The questionnaire included the following four parts: (a) general characteristics such a gender, education level, (b) 16 questions on knowledge (min=0, max=32); (c) 10 questions on attitude (min=0, max=20); and (d) nine questions on practice (min=0, max=36). The overall mean score of knowledge, attitude and practice was 26.48 (SD=3.66), 14.23 (SD=2.47), and 28.01 (SD=3.80), respectively. KAP of food -borne outbreaks was significantly higher in people who worked in health system ( $p<0.001$ ,  $p<0.001$ ,  $p<0.001$  respectively). KAP of food -borne outbreaks was significantly higher among people who had university education ( $p<0.001$ ,  $p<0.001$ ,  $p=0.006$  respectively). According to adjusted linear regression analysis, practice of food and water-borne disease increased 0.16% per one unit increase in the score of knowledge ( $p<0.001$ ) and 0.55% per one unit increase in the score of attitude ( $p<0.001$ ). Such studies can be performed to identify groups at risk and might need more training about health care.

### 1. Introduction

Foodborne diseases are a growing public health problem worldwide. The main cause is food contaminated with microorganisms such as parasites, bacteria, viruses and other pathogens (1). The most virulent pathogens causing food -borne diseases are *Campylobacter*, *Escherichia coli*, *salmonella* and *shigella* (2). Foodborne disease outbreak

occurs when two or more people have the same disease from the common contaminated food or drink source (3). The prevalent symptoms include an upset stomach, abdominal cramps, vomiting, diarrhea, fever and dehydration (4). According to WHO, "millions of people become ill and thousands die from preventable foodborne disease annually"(5). About 48 million Americans become sick due to contaminated food and water each year (3). WHO suggests several preventive keys for safe food including,

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keeping the food clean, separating raw and cooked foods, keeping food at safe temperatures, using safe water and raw materials (5). Most studies have indicated that the knowledge about food and water-borne outbreaks is low especially in young age groups (7-10). The knowledge, attitudes, and practice (KAP) studies are one of the best ways of assessing knowledge, attitude and practice of individuals (11). The current study was conducted after Water shortage and droughts in recent years in Isfahan. Therefore, with determining the level of knowledge, attitude and practice of people in Isfahan, if the level is low, we intervene in the education of the people and change their attitudes that lead to a better practice.

## 2. Materials and Methods

### 2.1. Study design

This was a cross-sectional survey conducted from January to December 2013 in Isfahan city, located in the center of Iran. All participants were enrolled voluntarily and anonymously in the study.

### 2.2. Study area

The study was conducted in Isfahan city in Isfahan Province. Isfahan city, with an area of 482 km<sup>2</sup> and a population of 1,829,932 people according to the Census of Population and Housing, is located in the Dasht-e-Kavir desert.

### 2.3 Sampling and sample size

Using a two-stage stratified cluster sampling 580 participants aged over 18 years recruited from various health centers, clients in Isfahan city from January to December 2013. The response rate was 100%.

### 2.4. Data gathering

The questionnaire consisted of four sections as follows: (a) 18 questions on general characteristics such as gender, academic rank and education level, history of food poisoning, etc... (b) 16 questions related to knowledge of foodborne diseases including three-choice questions (Yes/No/Do not know) with a total score between zero and 36; (c) 10 three-choice questions; (Agree/Not agree/No idea) related to attitude toward foodborne diseases, with a total score between zero to 20 and (d) 9 five-choice questions; (Always/Often/Sometimes/Never/No Response) related to practice on

foodborne diseases, with a total score between zero to 36.

We considered high knowledge, positive attitude and good practice if participant answered >85% of the questions correctly, moderate knowledge, attitude and practice if they answered 70-85% of the questions correctly and low knowledge, negative attitude and weak practice if they answered <70% of the questions correctly.

The reliability of the questionnaire was investigated by conducting a pilot study on 50 people (in 10 selected centers and in each center five patients were interviewed twice within two weeks). The values of Cronbach's alpha and Spearman correlation coefficients for knowledge and attitude were 0.60.

### 2.5. Statistical analysis

Analysis of variance was used to compare the mean score of knowledge, attitude and practice across subgroups. An adjusted linear regression model was employed to estimate the effect of knowledge, attitude and other related factors on practice against foodborne outbreaks. All analysis were performed at the 5% significance level ( $p < 0.05$ ) using Stata 11 (Stata Corp, College Station, TX, USA).

## 3. Results

From 580 volunteers enrolled into the study, 73.45% (426) were female and 26.55% (154) male. The mean ( $\pm$ SD) age of the participants was  $35.15 \pm 0.48$  years. The total mean ( $\pm$ SD) score of the participants' knowledge, attitude and practice of foodborne disease were  $26.48 \pm 3.66$ ,  $14.23 \pm 2.47$ , and  $28.01 \pm 3.80$ , respectively. About 48% of the participants had high knowledge and 25.51% had good practice against foodborne outbreaks and 9% had positive attitude for preparing healthy foods (Appendixes 1-3).

### 3.1. Mean difference of KAP by demographic and prognostic factors

The mean of knowledge, attitude and practice in men and women were almost identical and there was no statistically significant difference (Table 1). The mean of knowledge and attitudes, in single and married were identical and there was no statistically significant difference, also married participants had higher mean score of practice in comparison with singles, but it was not statistically significant ( $p = 0.26$ ). The mean scores of the knowledge, attitude and practice

**Table 1.** Compares the differences in knowledge - attitude and practice of participants in terms of demographic variables using t-test and ANOVA

| Variables       |                  | No. | Knowledge |      |         | Attitude |      |         | Practice |      |         |
|-----------------|------------------|-----|-----------|------|---------|----------|------|---------|----------|------|---------|
|                 |                  |     | Mean      | SD   | P value | Mean     | SD   | P value | Mean     | SD   | P value |
| Sex             | Male             | 154 | 26.46     | 3.70 | 0.58    | 14.10    | 2.49 | 0.22    | 28.15    | 4    | 0.70    |
|                 | Female           | 426 | 26.53     | 3.65 |         | 14.28    | 2.47 |         | 27.96    | 3.73 |         |
| Marital Status  | Married          | 511 | 26.39     | 3.56 | 0.96    | 14.21    | 2.43 | 0.71    | 28.05    | 3.76 | 0.26    |
|                 | Single           | 69  | 27.19     | 4.29 |         | 14.39    | 2.81 |         | 27.74    | 4.13 |         |
| Age Group       | 15-24 years      | 81  | 25.80     | 3.63 | 0.31    | 13.78    | 2.27 | 0.03    | 26.65    | 4.31 | 0.006   |
|                 | 25-34 years      | 233 | 26.41     | 3.66 |         | 14.17    | 2.39 |         | 27.98    | 3.63 |         |
|                 | 35-44 years      | 152 | 26.76     | 3.67 |         | 14.73    | 2.44 |         | 28.54    | 3.45 |         |
|                 | 45-54 years      | 78  | 26.91     | 3.86 |         | 14.15    | 2.51 |         | 28.44    | 3.58 |         |
|                 | 55-74 years      | 36  | 26.42     | 3.24 |         | 13.75    | 3.13 |         | 28.08    | 4.89 |         |
|                 | Illiterate       | 36  | 24.30     | 3.94 |         | 13.50    | 2.52 |         | 25.86    | 5.62 |         |
| Education       | High school      | 106 | 25.23     | 4.29 | <0.001  | 13.76    | 2.47 | <0.001  | 28.11    | 3.86 | 0.006   |
|                 | Diploma          | 225 | 26.23     | 3.31 |         | 14.10    | 2.41 |         | 28.08    | 3.58 |         |
|                 | Academic         | 213 | 27.74     | 3.18 |         | 14.74    | 2.45 |         | 28.24    | 3.55 |         |
| Job             | Health employee  | 53  | 29.49     | 2.64 | <0.001  | 16.15    | 2.14 | <0.001  | 29.77    | 3.19 | <0.001  |
|                 | Regular employee | 59  | 27.69     | 3.24 |         | 14.36    | 2.62 |         | 27.59    | 3.79 |         |
|                 | Worker           | 32  | 23.78     | 4.47 |         | 13.31    | 2.56 |         | 26.71    | 4.75 |         |
|                 | Housekeeper      | 299 | 25.79     | 3.49 |         | 13.93    | 2.38 |         | 27.68    | 3.77 |         |
|                 | Teacher          | 26  | 26.81     | 3.71 |         | 14.81    | 2.40 |         | 27.96    | 3.79 |         |
|                 | Free job         | 81  | 26.81     | 3.47 |         | 14.14    | 2.44 |         | 29       | 3.61 |         |
| Geographic area | Other            | 30  | 27.37     | 3.03 | 0.04    | 14.37    | 2.19 | 0.7     | 27.70    | 3.42 | 0.5     |
|                 | North            | 116 | 26.98     | 2.89 |         | 14.23    | 2.57 |         | 28.78    | 3.61 |         |
|                 | South            | 116 | 25.95     | 4.46 |         | 14.43    | 2.56 |         | 27.31    | 4.36 |         |
|                 | East             | 116 | 26.14     | 3.45 |         | 14.27    | 2.46 |         | 28.15    | 3.70 |         |
|                 | West             | 116 | 27.10     | 3.49 |         | 14       | 2.34 |         | 27.84    | 3.83 |         |
| food poisoning  | Center           | 116 | 26.24     | 3.76 | 0.008   | 14.24    | 2.45 | 0.03    | 27.96    | 3.62 | 0.003   |
|                 | Yes              | 223 | 26.02     | 3.78 |         | 13.99    | 2.61 |         | 27.46    | 4    |         |
|                 | No               | 357 | 26.77     | 3.57 |         | 14.39    | 2.37 |         | 28.35    | 3.64 |         |

increased with increase of age, attitude and practice which were significant statistically ( $p=0.03$ ,  $p=0.006$ , respectively), but knowledge was not significant. The mean scores of knowledge, attitude and practice increased by level of education which was statistically significant ( $p>0.001$ ,  $p>0.001$  and  $p=0.006$ , respectively). Health workers had a better knowledge, attitudes and practice than other jobs and that it was statistically significant ( $p<0.0001$ ,  $p<0.0001$  and  $p=0.0005$ , respectively), but workers had little knowledge, attitude and practice. The study showed that in the Southern region of the city knowledge and the practice were worse than in other parts, but the difference was not significant.

The mean scores of knowledge, attitude and practice of people who had food poisoning during their lives were worse than those who did not have food poisoning, and it was statistically significant ( $p=0.008$  and  $p=0.03$  and  $p=0.003$ , respectively).

### 3.2. Adjusted multiple regression analysis results

The adjusted multiple regression analysis showed the jobs and education factors together have a significant impact on the knowledge ( $p<0.001$  and  $F=11.24$ ).

Accordingly, all jobs were less informed than the health workers, tenured employees: with 1.59, workers: 4.59, housewives: 2.97, teachers: 2.49, self-employed: 2.5 and other jobs: 1.99, had less knowledge than health workers, all of which were statistically significant. People with secondary education had 0.9 score more knowledge than the illiterates and with preliminary education individuals, which was not statistically significant. However, high school and college graduates' knowledge were respectively 1.61 and 2.29 score more than the illiterates and people with preliminary education, all were statistically significant.

The adjusted multiple regression analysis showed that occupation and education

**Table 2.** Adjusted multiple regression analysis assessing the effect of related factors on foodborne outbreak

| Variables                  | Knowledge   |                |         | Attitude    |                |         | Practice    |                |         |
|----------------------------|-------------|----------------|---------|-------------|----------------|---------|-------------|----------------|---------|
|                            | Coefficient | Standard error | P-Value | Coefficient | Standard error | P-Value | Coefficient | Standard error | P-Value |
| Job                        |             |                |         |             |                |         |             |                |         |
| Health employee(Reference) | -           | -              | -       | -           | -              | -       | -           | -              | -       |
| Tenured employee           | -1.75       | 0.46           | <0.001  | -1.75       | 0.46           | <0.001  | -2.27       | 0.71           | 0.001   |
| Worker                     | -2.55       | 0.58           | <0.001  | -2.55       | 0.58           | <0.001  | -2.71       | 0.89           | 0.003   |
| Housekeeper                | -2.04       | 0.39           | <0.001  | -2.04       | 0.39           | <0.001  | -1.87       | 0.61           | 0.002   |
| Teacher                    | -1.29       | 0.57           | 0.02    | -1.29       | 0.57           | 0.02    | -2.17       | 0.90           | 0.02    |
| Free job                   | -1.86       | 0.44           | <0.001  | -1.86       | 0.44           | <0.001  | -0.61       | 0.69           | 0.37    |
| other                      | -1.75       | 0.55           | 0.001   | -1.75       | 0.55           | 0.001   | -0.94       | 0.89           | 0.29    |
| Education                  |             |                |         |             |                |         |             |                |         |
| Illiterate (Reference)     | -           | -              | -       | -           | -              | -       | -           | -              | -       |
| High school                | 0.26        | 0.46           | 0.58    | 0.26        | 0.46           | 0.58    | 2.43        | 0.72           | 0.001   |
| Diploma                    | 0.48        | 0.43           | 0.27    | 0.48        | 0.43           | 0.27    | 2.43        | 0.69           | <0.001  |
| Academic                   | 0.62        | 0.46           | 0.17    | 0.62        | 0.46           | 0.17    | 2.36        | 0.74           | 0.002   |
| Age Group                  |             |                |         |             |                |         |             |                |         |
| 15-24 years(Reference)     | -           | -              | -       | -           | -              | -       | -           | -              | -       |
| 25-34 years                |             |                |         |             |                |         | 1.49        | 0.51           | 0.003   |
| 35-44 years                |             |                |         |             |                |         | 2.12        | 0.54           | <0.001  |
| 45-54 years                |             |                |         |             |                |         | 2.13        | 0.63           | 0.001   |
| 55-74 years                |             |                |         |             |                |         | 2.33        | 0.79           | 0.003   |
| Constant                   | 15.55       | 0.55           | <0.001  | 15.55       | 0.55           | <0.001  | 25.75       | 0.99           | <0.001  |
|                            | F=11.24     | P<0.001        |         | F=11.24     | P<0.001        |         | F=4.19      | P<0.001        |         |

together had a significant effect on attitude ( $p<0.001$  and  $F= 11.24$ ). All jobs had lower attitude than the health workers. Tenured employees, with 1.75 score, workers 2.55, housewives 2.04, teachers 1.29, self-employed 1.86 and other jobs 1.75, had lower attitudes compared with health workers; all were statistically significant.

People with secondary education with 0.26 score, high school graduates 0.48 and college education 0.62 score had higher attitude than the illiterates and people with preliminary education, but they were not statistically significant.

The adjusted multiple regression analysis showed that the factors of occupation and education and age groups together had a significant impact on practice ( $p<0.001$  and  $F=4.19$ ). According to adjusted multiple regression analysis, Tenured employees with 2.27 score, workers 2.71, housewives 1.87, teachers 2.17, self-employed 0.61 and other jobs 0.94, had less practice towards health workers that all of them except self-employed and other jobs, were statistically significant. People with secondary with education 2.43, high school graduates 2.43 and college education 2.36 had more practice than the illiterates and people with preliminary

education that all of them were statistically significant. All age groups had better practice than age group 15-24 age group. The age group of 25- 34: with 1.49 score, the age group of 35-44: 2.12, the age group of 45-54: 2.13 and the age group of 55-74: 2.33 had more practice than the age group of 15-24, and all of them were statistically significant (Table 2).

### 3.3. Adjusted linear regression analysis

According to adjusted linear regression analysis (Table 3), practice against foodborne disease increased 0.16% per one unit increase in the score of knowledge ( $p<0.001$ ) and 0.55% per one unit increase in the score of attitude ( $p<0.001$ ).

## 4. Discussion

The total means scores of knowledge, attitude and practice of foodborne diseases in men and women were alike. The knowledge of single people was better than married ones. The result of analysis of variance showed that with the increase of age, the mean score of KAP increases and with the increase in the level of education, the mean score of KAP increases, and in the health workers the mean score of KAP is better than other jobs, but in the workers, the mean score of KAP was less

**Table 3.** Adjusted linear regression analysis assessing the effect of knowledge and attitude on practice

| Variables                      | Coefficient | Standard error | p value |
|--------------------------------|-------------|----------------|---------|
| Knowledge (per one-unit score) | 0.16        | 0.04           | <0.001  |
| Attitude (per one-unit score)  | 0.55        | 0.06           | <0.001  |
| Constant                       | 15.88       | 1.16           | -       |

than other occupations. This could be due to their low literacy and hard work and lack of training. For different areas of the city, the Southern people had poor knowledge and practice than other areas. In people who had been diagnosed with food poisoning during life, the mean score of KAP was lower than those who were not diagnosed with food poisoning. This finding indicates that individuals who have poorer knowledge, attitude and practice are more prone to foodborne diseases. Therefore, these types of studies can identify groups at risk and might need more training about health care. The knowledge and attitudes conducive to the practice of the linear regression results showed 0.16 units increases the practice score by increasing a knowledge score and 0.55 unit increases the practice score by increasing an attitude score.

In one study (22) no significant difference between age groups and knowledge was reported, that is similar to ours'. Another study (16) showed that the practice ratio of foodborne illness is average we also found same result (52%).

In another study (7) report 68 % of people always washed their hands with water and soap, 83% of the women and 87 % of the men had high knowledge about foodborne diseases, but this difference was not significant ( $p=0.51$ ). The knowledge and education level had a direct relationship so that people with university education had the highest level of knowledge on diarrheal disease. This difference was statistically significant. In our study about 90 % of people washed their hands with water and soap, 44 % of the women and 46 % of the men had high knowledge but this difference was not statistically significant. The knowledge and education in our study also had a direct relationship. Another study (12) reported that 57.9%, 48% and 89.6% had moderate scores of knowledge, positive scores of attitude and positive practice, respectively. There was a direct relationship among knowledge, occupation and education level ( $p < 0.001$ ). In our study, 41%, 9% and 26% had moderate score of knowledge, positive score of attitude and positive score of practice. There was a direct relationship among knowledge, occupation and education level in our study ( $p < 0.001$ ). Another study (17) showed that 49% of respondents in Pablulybreh and 46% in Napuryor always wash their hands by soap

after going to the bathroom, but in our study this rate was 90%.

About 61% of the participants in a study (18) and 77% of the participants in our study believed in use of cooking clothes and gloves to reduce contamination of food. Besides 78% of the participants believed to separating raw foods from cooked foods (in our study it was 62%) and 61% of the respondents always defrosted frozen food at room temperature (in our study it was 23%). About 99% of the participants in a study (13) and 62% of the participants in our study believed to keep cooked foods separate from raw foods, 53% of the participants in this study and 77% of the participants in our study believed to use frozen foods only once after heating. Another study (19) showed that 90.7 % of the participants knew that germs grow at room temperature more than the refrigerator (in our study it was 71.38%). About 77% of respondents when they went to shopping always checked expiry date (in our study it was 82%), only 4.4% of the participants washed the vegetables with antiseptic materials (in our study it was 20.86%). Another study (20) showed that 70% of respondents had correct answer for knowledge. The knowledge and attitudes of health predicted 42.6% of the behavior; the attitude was between the knowledge and the practice. In our study, the rate of correct answers was 74% and the attitude was between the knowledge and the practice.

Another study (21) reported that the educated people had better practice than others, in our study the same results obtained. This study also showed that the knowledge and age are interdependent; in our study we found the same result.

**Limitations:** Our study subjects were those who visited health centers from different parts of the city.

## 5. Conclusion

The results of our study showed that the knowledge has led to attitude and the attitude has led to practice. With regard to the issues raised and the need for preventive measures, it is essential for people to start or continue training to improve their knowledge, attitude and practice and learn about factors influencing foodborne outbreaks.

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**Appendix 1.** Frequency of response to knowledge's question on water and foodborne outbreak

| Row<br>s | Knowledge's Questions                                                                                         | Correct Answer |         | False Answer |         | Do not Know |         |
|----------|---------------------------------------------------------------------------------------------------------------|----------------|---------|--------------|---------|-------------|---------|
|          |                                                                                                               | No.            | Percent | No.          | Percent | No.         | Percent |
| 1        | Food poisoning can be caused by bacteria in food or water?                                                    | 531            | 91.55   | 17           | 2.93    | 32          | 5.52    |
| 2        | Outbreaks of foodborne disease: when two or more people have similar illnesses resulting use of common foods? | 377            | 65      | 70           | 12.07   | 133         | 22.93   |
| 3        | Washing hands before cooking and eating can help prevent foodborne illnesses?                                 | 524            | 90.34   | 48           | 8.28    | 8           | 1.38    |
| 4        | Washing herbs with water is enough?                                                                           | 508            | 87.59   | 54           | 9.31    | 18          | 3.1     |
| 5        | Symptoms of foodborne disease are fever, diarrhea and vomiting?                                               | 415            | 71.55   | 56           | 9.65    | 109         | 18.8    |
| 6        | Disinfect vegetables may prevent the development of foodborne disease in humans?                              | 501            | 86.38   | 42           | 7.24    | 37          | 6.38    |
| 7        | Ready food (fast food) causes less food poisoning?                                                            | 508            | 87.59   | 46           | 7.93    | 26          | 4.48    |
| 8        | Cholera can be transmitted through water and food?                                                            | 412            | 71.03   | 44           | 7.59    | 124         | 21.38   |
| 9        | Mince becomes corrupted soon?                                                                                 | 334            | 57.59   | 188          | 32.41   | 58          | 10      |
| 10       | Botulism is one of the causes of food poisoning?                                                              | 257            | 44.31   | 23           | 3.97    | 300         | 51.72   |
| 11       | Boiling of canned food can reduce food borne disease?                                                         | 492            | 84.83   | 48           | 8.27    | 40          | 6.90    |
| 12       | Microbial growth in refrigerated is greater than room temperature?                                            | 414            | 71.38   | 76           | 13.10   | 90          | 15.52   |
| 13       | Drinking well water can be caused to diarrhea?                                                                | 464            | 80      | 42           | 7.24    | 74          | 12.76   |
| 14       | Long maintenance of cooked food at room temperature is a cause of food poisoning?                             | 521            | 89.83   | 32           | 5.52    | 27          | 4.65    |
| 15       | Microbial growth in food in summer is less than winter?                                                       | 416            | 71.72   | 90           | 15.52   | 74          | 12.76   |
| 16       | Drinking water contaminated with sewage can cause hepatitis A?                                                | 196            | 33.79   | 49           | 8.45    | 335         | 57.76   |

**Appendix 2.** Frequency of response to attitude's questions on water and foodborne outbreak

| Row<br>ws | Attitude's questions                                                                  | Positive attitude |         | Negative attitude |         | Do not know |         |
|-----------|---------------------------------------------------------------------------------------|-------------------|---------|-------------------|---------|-------------|---------|
|           |                                                                                       | No.               | Percent | No.               | Percent | No.         | Percent |
| 1         | Reheating cooked food, makes me sure it is healthy.                                   | 269               | 46.38   | 214               | 36.90   | 97          | 16.72   |
| 2         | Washing vegetables with just water and dish soap is enough.                           | 166               | 28.62   | 358               | 61.72   | 56          | 9.66    |
| 3         | If the door is swollen cans do not use it.                                            | 498               | 85.86   | 32                | 5.52    | 50          | 8.62    |
| 4         | Raw foods can be placed next to cooked foods in refrigerators.                        | 357               | 61.55   | 87                | 15      | 136         | 23.45   |
| 5         | Putting bread in recycling bags is okay.                                              | 504               | 86.90   | 35                | 6.03    | 41          | 7.07    |
| 6         | After defrost of frozen food I can be re-frozen food again.                           | 445               | 76.73   | 47                | 8.10    | 88          | 15.17   |
| 7         | Hats and gloves and special cooking clothes reduce food contamination during cooking. | 449               | 77.41   | 45                | 7.76    | 86          | 14.83   |
| 8         | Food hygiene training is very important.                                              | 487               | 83.96   | 7                 | 1.21    | 86          | 14.83   |
| 9         | Keeping cooked food over three days in the refrigerator is okay.                      | 390               | 67.24   | 116               | 20      | 74          | 12.76   |
| 10        | In outbreak of cholera, you refused to eat vegetables at home.                        | 150               | 25.86   | 315               | 54.31   | 115         | 19.83   |

**Appendix 3.** Frequency of response to attitude's statements on water and foodborne outbreak

| Row | Practice's Questions:                                                           | Excellent |         | Good |         | Bad |         | Very Bad |         |
|-----|---------------------------------------------------------------------------------|-----------|---------|------|---------|-----|---------|----------|---------|
|     |                                                                                 | No.       | Percent | No.  | Percent | No. | Percent | No.      | Percent |
| 1   | Do you separate raw food from cooked food can?                                  | 364       | 62.76   | 121  | 20.86   | 66  | 11.38   | 29       | 5       |
| 2   | Do you defrost frozen foods at room temperature?                                | 136       | 23.45   | 128  | 22.07   | 185 | 31.89   | 131      | 22.59   |
| 3   | Do you look expiry date before you buy a food product?                          | 476       | 82.07   | 62   | 10.69   | 31  | 5.34    | 11       | 1.90    |
| 4   | Do you wash the herbs with water, dish soap and disinfectant in your home?      | 121       | 20.86   | 93   | 16.04   | 89  | 15.34   | 277      | 47.76   |
| 5   | Do you keep cooked food less than two hours at room temperature?                | 182       | 31.38   | 225  | 38.79   | 116 | 20      | 57       | 9.83    |
| 6   | Do you wash your hands with soap and water after going to the toilet?           | 524       | 90.35   | 25   | 4.31    | 22  | 3.79    | 9        | 1.55    |
| 7   | Do you go to the health center or hospital if you have diarrhea caused by food? | 302       | 52.07   | 122  | 21.03   | 124 | 21.38   | 32       | 5.52    |
| 8   | Do you use mineral water while traveling?                                       | 306       | 52.76   | 142  | 24.48   | 112 | 19.31   | 20       | 3.45    |
| 9   | Do you carry cooked food on long trips?                                         | 205       | 35.35   | 268  | 46.21   | 64  | 11.03   | 43       | 7.41    |