

Knowledge, Practices and Attitude regarding Food Safety among Rural Women in Ismailia Governorate

Maha saad Mohamed¹,

Farida kamel yousef², Samar Mohammed Abdel-kader Alngery³

1. **Nursing Specialist at Health Directorate, Ismailia Governorate, Egypt.**
2. **Associate Professor of Family and Community Health Nursing, Faculty of Nursing, Suez Canal University, Egypt.**
3. **Lecturer of Family and Community Health Nursing, Faculty of Nursing, Suez Canal University, Egypt.**

Abstract

Background: Food safety is defined as producing, handling, storing and preparing food in a manner that prevent foodborne disease. Food safety is important as it help to protect people from the risk of Food borne illnesses. **Aim:** the study aimed to assess knowledge, practices and attitude regarding food safety among rural women in Ismailia Governorate. **Design:** descriptive deign was used in this study. **Setting:** the study was conducted at homes of Abo Sower Elbald village at Ismailia governorate. **Sample:** Systematic random sampling consisted of 372 women. **Tools:** Two tools were used in the present study **First tool:** interviewing questionnaire consist: of Socio demographic characteristics of studied rural women, Women's knowledge and practices regarding food safety (as reported by women) **Second tool:** Likert type rating scale for women attitude regarding food safety. **Results:** the results revealed that, the studied women's had unsatisfactory total knowledge score (61.3%), while they had unsatisfactory total practices score (82%), according to studied women's attitude, they had disagreed total score (58%) regarding food safety. **Conclusion:** There was statistically significant relation between age, educational level, working status and family size and knowledge, practice, attitude toward food safety. **Recommendations:** Develop health educational program among rural women regarding food safety.

Key words: Food safety, Rural women, Foodborne disease.

1.Introduction:

Food safety is defined as producing, handling, storing, and preparing food in a manner that prevents infections or diseases and retains enough nutrients for a healthy diet which is a major public health concern, (Caswell, 2019).

Food safety is important as it help to protect people from the risk of food borne illnesses. Eating unsafe food can make people very sick and can even cause death. Preparing safe food is essential to protect people from the hazards of foodborne illnesses, (Talaie et al, 2015).

Foodborne diseases are one of the most important causes of morbidity and mortality worldwide, but they can be prevented. Therefore, food safety is a top issue in terms of public authority, consumers, and producers when considering the indispensability and economic importance of food products in life, (Sanlier and Baser, 2020).

Women in community mostly deal with food as a cook and safety of food but in rural community they used unhygienic methods and preserved the food in polluted environment. Practice of food handlers about food safety and food hygiene in rural

community also very insufficient. (Thelwell-Reid, 2014).

1.2. Significance of the study:

The Centre for Disease Control and Prevention (CDC) estimated that food-borne diseases caused approximately 76 million illnesses annually among the United States of America's 290 million residents, as well as 325,000 hospitalizations. The incidence of food-borne diseases is rising in developing countries, as well as in the developed world (Sharmin, 2019).

The role of community health nurse is to inform women about the food safety in rural area, the known food borne diseases, and what to do if a food poisoning, (Dotson, 2018).

Subject and Methods

2.1. The aim of the study: Assess knowledge, practices and attitude regarding food safety among rural women in Ismailia governorate.

2.2. Research questions:

- What is the level of knowledge regarding food safety among women in rural area?
- What are practices used by women towards food safety?
- What is women's attitude regarding safe food handling?

-Are there relationship between socio-demographic factors and women's knowledge, practices and attitude regarding food safety in rural area?

2.3. Study design: A descriptive design was conducted in this study.

2.4. The sample of the study: The sample size was determined according to the following equation, (Glaser, 2013).

$$n = \left[\frac{Z_{\alpha/2}}{E} \right]^2 * P(1 - P)$$

-n = required sample size. -

$Z_{\alpha/2} = 1.96$ (The critical value that divides the central 95% of - the Z distribution from the 5% in the tail). -P1

= prevalence of food safety practice among Egyptian women (40%), (Ucar *et al*,2016).

-E= margin of error -

So n = 371.7 -

According to the calculation the sample size was **372 women**.

2.5. Study setting: The study was carried out in homes of Abo Sower Elbald village.

***Sample type:**

Systematic random sampling technique was used, by selected the first house in the village, leaving two houses, taking the fourth and so on, after the number of houses was taken from the information center and divided by the number of sample and then to the end of the

houses and back to the first point at the beginning of the sample.

2.6. Tools of data collection:

2.6.1. Tool (1): A structured interview questionnaire:

It was modified or developed by the researcher after reviewing relevant literature guided by a questionnaire and was used to collect the data about the knowledge, attitudes and practices of the food safety, (Farahat *et al.*, 2015)

Part(I): Socio-demographic characteristics of the studied women as: (Age, education, occupation, number of family members.....).

Part(II): Women's knowledge regarding food safety : such as (Personal hygiene, food storage, food preparation, cleaning and sanitation.....)

Scoring system of knowledge: -

The women's questionnaire sheet for assessment knowledge regarding food safety consisted of 33 items on the five aspect of women's knowledge about personal hygiene 5 items, food storage 12 items, food preparation 7 items, cleaning and sanitation 3 items and environmental hygiene 7 items, the response was scored (2) for each correct answer and (1) for the incorrect answer and accordingly their

knowledge was classified either satisfactory (60% or more) or un-satisfactory (less than 60%), (Son et al., 2015).

Part(III) :Women's practices regarding food safety: (as reported by women): such as: how to separate the food and prepared foods, food cooking, avoid food contamination, cleaning....)

Scoring system of practices: -

The women's questionnaire sheet for assessment practices regarding food safety consisted of 30 items (as reported by women), the response was score (3) for each correct answer and (2) for some time and (1) for the incorrect answer and accordingly their practices was classified either satisfactory (60% or more) or un-satisfactory (less than 60%), (Son et al, 2015).

2.6.2. Tool (2): Attitude regarding food safety :(Likert type rating scale):

This tool was modified by the researcher to assess women attitude regarding food safety such as personal hygiene, food storage, food preparation, food cooking and cleaning. It contains responses that ranged from strongly agree scored (3), to undefined scored (2) and strongly disagree scored (1). Then according to women responses, their attitude was

positive (60% or more) or negative (less than 60%), (Fawzi and Shama, 2010).

Content validity:

-The tools of data collection were ascertained by a jury of 3 experts in community health nursing field. Modifications of the tools were done accordingly.

2.7. Field work:

Data collection was carried out for 3 months in the period from May 2020 until July 2020.

-The Researcher carried out the study in homes of Abo Sower Elbald village at Ismailia governorate, for four days per week, from 9 a.m. to 2 p.m. and interviewed to all the participants with the previously mentioned characteristics with participate community member (mayor) he sent someone who followed him to help the researcher enter the house easily, and the sample was collected in a systematic random by selecting the first house in the village, leaving two houses, taking the fourth, and so on.

-The researcher filled the questionnaire by interviewing women individually about socio demographic characteristic, knowledge and practices (as reported by women) and likert scale to assess the women's attitudes of the food safety within 20 minutes.

2.9. Ethical considerations:

-The research approval was obtained before study implementation from three the ethical committee

-The researcher clears the objective and aim of the study to the studied women.

-The women are allowed to choose to participate or not participate, and they have right to withdraw from a study any time without penalty.

2.10. Statistical design:

Data was collected, presented in tabular form. Percentages were calculated for qualitative data, mean and standard deviations were calculated for quantitative data. The Statistical Package for Social Sciences (SPSS) version 24 statistical software package was used for statistical analysis. Chi square test was used for interpretation of results, p value ≤ 0.05 was considered significant.

2. Results:

Table (1) shows that the mean age of the studied women was 34.35 ± 10.5 , regarding women's educational level, 46.8% of them had secondary school, 94.4% of women were married and 86.3% of them not working, and 96.8% of their family had income sufficient.

Figure (1): shows that, the women had unsatisfactory total knowledge score 61.3%, while 38.7% of them had satisfactory total knowledge score.

Figure (2): shows that the women had unsatisfactory total practice score 82%, while 18% of them had satisfactory total practice score.

Figure (3) shows that, 58% of the studied women's had disagree total attitude score, while 10.3% of them had undefined total attitude score and 31.7% of them had agree total attitude score regarding food safety.

Table (2) clarifies that, there were statistically significant relationship between age, educational level, working status, family size and studied rural women level of knowledge towards food safety ($p < 0.001$).

Table (3): shows that, there were statistically significant differences between studied rural women reported practices regarding food safety and their educational level, working status and family income respectively ($p < 0.05$).

Table (4) shows that, was statistically significant relation between studied rural women reported attitude regarding food safety

and their age, educational level, working status and family size and attitude toward food safety ($p < 0.001$).

3. Discussion:

The present study found that, according to socio-demographic characteristics, mean age of rural women was 34.35 ± 10.5 years old. This finding is in the line with the study by **Mendagudali et al, (2016)** who studied "Knowledge, attitude, and practices of food safety among women of Khaza bazar, the rural field practice area, Kalaburagi, Karnataka" who reported that, the mean age of studied rural women was 32.34 ± 10 years old.

The current study found that, studied rural women's educational level, less than half of them had secondary school. This finding is in the line with the study by **Gautam et al, (2017)** who studied "Socio-demographic factors of household heads associated with knowledge of food safety" who reported that, the studied women had secondary educational level.

According to knowledge toward food safety, the present study found that, the studied rural women had unsatisfactory total knowledge score regarding food safety. These findings are in the same line with the study by **Naeem et al, (2018)** who studied "Food safety knowledge, attitude, and food handling

practices of household women in Lahore" who reported that, knowledge less than half which shows that household women lacked food safety knowledge about food cooked and food preparation.

Similarly, the study by **Alqurashi et al, (2019)** who studied "the safety of cooked food and raw food depends only on the temperature at which it is stored" reported that, unsatisfactory knowledge about food storage and food cooked.

According to Practice toward food safety, the present study found that, the studied women's had unsatisfactory total practice score as reported regarding food safety. These findings are in the line with the study by **Geetha et al, (2020)** who studied "self-reported versus observed measures: food hygiene practices in rural women" who mentioned that there is a woman had more than two thirds of practice evidently, unhygienic practices for food preparation and food cooking regarding food safety.

According to Attitude toward food safety, the present study found that, studied rural women had disagree total attitude score about preserving foods well has an effect on food safety. This is in agreement with **Ahmed et al, (2020)** who studied "Food hygiene knowledge, attitude and practices among

home food handlers in Elmanagil City" who mentioned that most of women demonstrated inadequate storage of perishable food and an elevated risk of cross-contamination when food is stored in a refrigerator or freezer. Partially used ingredients are poorly stored and without identification, and packages are not cleaned before storage.

Concerning the relation between socio-demographic characteristic and total knowledge score regarding food safety, the present study revealed that, there was statistically significantly between age and total knowledge score. Also, they had statistically significantly with of educational level. The finding of this study in conformity with **Bukhari et al, (2018)** who mentioned, statistically significant higher percentage relation between age and family size related knowledge of food safety, have clearly shown the positive association between increased level of education and knowledge of food safety.

The current study found that, there were statistically significant relationship between educational level, working status and family income and women's practices. The finding of this study is in conformity with **Medrano et al, (2015)** who studied " Impact of prescribed cleaning and disinfectant use on microbial

contamination in the home" who reported that the relation between socio-demographic characteristic and total practice score regarding food safety is found that, statistically significant association was seen between the age of the women and food safety practices.

Concerning the relation between socio-demographic characteristic and attitude toward food safety, the present study revealed that there was statistically significant relation between age, educational level, working status and family size and total attitude score regarding food safety. The finding of this study is in conformity with **Soon et al, (2020)**, who studied "Structural equation modeling of food safety knowledge, attitude and practices among consumers in Malaysia" who reported that, statistically significant relation between education and attitude of rural women. Evidently, negative attitude exists in all education levels. There is more positive attitude toward food safety among highly educated women than less educated women.

5. Conclusion:

-There was statistically significant relationship between age, educational level, working status and family size and knowledge toward food safety.

-There were statistically significant differences between practice and educational level, working status and family income.

-There was statistically significant relation between age, educational level, working status and family size and attitude toward food safety.

6. Recommendations:

- 1- Develop health educational program among rural women regarding food safety about:- personal hygiene, food storage, food preparation, cleaning and sanitation, environmental hygiene.
- 2- Distributes pictures about food safety for the rural women.

Table 1: Distribution of studied rural women according to their Socio-demographic characteristics.

Items	No.	%
Age in years		
Mean±SD	34.35±10.5	
Median (Range)	32(16-58)	
Educational level		
Illiterate	94	25.3
Read and write	6	1.6
Primary/Preparatory school	31	8.3
Secondary school	174	46.8
Bachelor	48	12.9
Institutional education	19	5.1
Working status		
Working	51	13.7
Not working	321	86.3
Marital status		
Un-married	13	3.5
Married	351	94.4
Divorced	2	0.5
Widowed	6	1.6
Family size		
Mean±SD	5± 2	
Median (Range)	5(2-10)	
Family income		
Insufficient	6	1.6
Sufficient	360	96.8
Sufficient and Savings	6	1.6

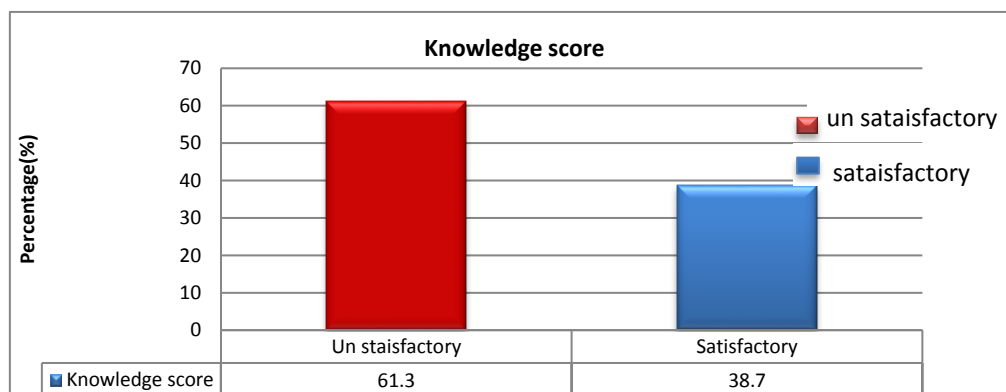


Figure (1): Total mean score of studied rural women knowledge regarding food safety



Figure (2): Total mean score of studied rural women practices regarding food safety

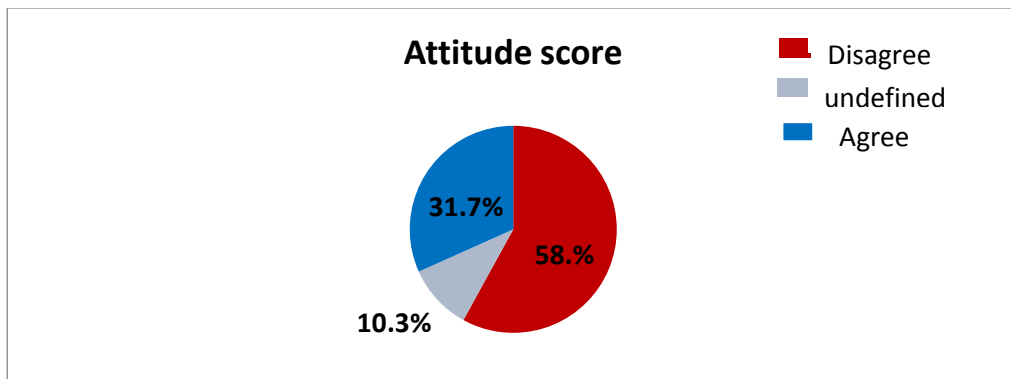


Figure (3): Total mean score of studied rural women attitude regarding food safety

Table 2: the relations between total knowledge score with socio-demographic data of studied women.

Item	Satisfactory knowledge		Unsatisfactory knowledge		P-value
	No.	%	No.	%	
Age in years Mean±SD	28.19±6.4		38.23±10.7		<0.001* ¹
Educational level					<0.001* ²
Illiterate	14	9.7%	80	35.1%	
Read and write	2	1.4%	4	1.8%	
Primary/Preparatory school	7	4.9%	24	10.5%	
Secondary school	73	50.7%	101	44.3%	
Bachelor	38	26.4%	10	4.4%	
Institutional education	10	6.9%	9	3.9%	
Working status					<0.001* ³
Working	39	27.1%	12	5.3%	
Not working	105	72.9%	216	94.7%	
Marital status					0.057 ²
Un-married	5	3.5%	8	3.5%	
Married	137	95.1%	214	93.9%	
Divorced	2	1.4%	0	0%	
Widow	0	0%	6	2.6%	
Family size Mean±SD	4±1		6±2		<0.001* ¹
Family income					0.047* ²
Insufficient	0	0%	6	2.6%	
Sufficient	140	97.2%	220	95.5%	
Sufficient and Savings	4	2.8%	2	0.9%	

1. Independent t test used; 2. Fisher exact test used; 3. Chi square test used. *Statistically significant as p<0.05.

Table 3: The relations between total practice score with socio-demographic data of studied rural women.

Item	Satisfactory practice (N=67)		Unsatisfactory practice (N=305)		P-value
	No.	%	No.	%	
Age in years					
Mean±SD	33.8±11.3		34.5±10.3		0.633¹
Educational level					
Illiterate	17	25.4	77	25.2	0.001*²
Read and write	0	0	6	2	
Primary/Preparatory school	8	11.9	23	7.5	
Secondary school	19	28.4	155	50.8	
Bachelor	15	22.4	33	10.8	
Institutional education	8	11.9	11	3.6	
Working status					
Working	16	23.9	35	35	0.008*³
Not working	51	76.1	270	270	
Marital status					
Un-married	2	3	11	3.6	0.333 ²
Married	63	94	288	94.4	
Divorced	2	3	0	0	
Widow	0	0	6	2	
Family size					
Mean±SD	5±2		5±2		1.00 ¹
Family income					
Insufficient	4	6	2	0.7	0.014*²
Sufficient	63	94	297	97.4	
Sufficient and Savings	0	0	6	2	

1. Independent t test used; 2. Fisher exact test used; 3. Chi square test used. *Statistically significant as p<0.05.

Table 4: The relations between total attitude score with socio-demographic data of studied rural women.

Item	disagree Attitude		undefined Attitude		Agree Attitude		P-value
	No.	%	No.	%	No.	%	
Age in years							
Mean±SD	39.7±11.2		34±10.5		31.9±9.2		<0.001* ¹
Educational level							
Illiterate	54	45.8	10	5.3	30	10.4	<0.001* ²
Read and write	0	0	0	0	6	2.4	
Primary/Preparatory school	9	7.6	9	3.7	12	5	
Secondary school	46	39	34	16	94	34.4	
Bachelor	9	7.6	0	0	39	15.4	
Institutional education	0	0	0	0	19	7.5	
Working status							
Working	6	5.1	15	6	30	11.7	<0.001* ³
Not working	112	94.9	60	22.3	149	60	
Marital status							
Un-married	3	2.5	2	0.8	8	6.1	0.246 ²
Married	111	94.1	89	24.5	151	70	
Divorced	0	0	0	0	2	0.8	
Widow	4	3.4	0	0	2	0.8	
Family size							
Mean±SD	6±2		5±2		5±1		<0.001* ¹
Family income							
Insufficient	4	3.4	0	0	2	0.8	0.211 ²
Sufficient	112	94.9	48	17	200	80.6	
Sufficient and Savings	2	1.7	0	0	2	1.6	

1. Independent t test used; 2. Fisher exact test used; 3. Chi square test used. *Statistically significant as p<0.05.

6. References:

- Ahmed, O. B., Mohamed, S. S., Dablood, A. S., & Elawad, M. A. , (2020).** Food hygiene knowledge, attitude and practices among home food handlers in Elmanagil City, Sudan. *African Journal of Microbiology Research*, 14(4), 106-111.
- Alqurashi, N. A., Priyadarshini, A., & Jaiswal, A. K. (2019).** Evaluating food safety knowledge and practices among foodservice staff in Al madinah hospitals, Saudi Arabia. *Safety*, 5(1), 9.
- Bukhari, N., Afzal, M., Azhar, M., Hussain, M., & Gilani, S. A., (2018).** Knowledge and practice regarding food safety among domestic food handlers in rural community Lahore, 12(1), 3-3.
- Caswell, J. A., (2019).** Valuing food safety and nutrition. Routledge.
- Dotson, Jo Ann Walsh, & Jane Smilie. (2018):** "Rural Public Health Structure and Practice and the Role of the Public Health Nurse." *Rural Nursing: Concepts, Theory, and Practice* 361.
- Farahat, M. F., El-Shafie, M. M., & Waly, M. I. ,(2015).** Food safety knowledge and practices among Saudi women. *Food Control*, 47, 427-435.
- Fawzi M & Shama ME, (2010):** Food safety knowledge and practices among women working in Alexandria University. *Journal of the Egyptian Public Health Association*; 84(1): 95-117.
- Gautam, S., Gaire, D., Bajgain, B. B., Acharya, D., Gautam, K., Bajgain, K. T., & Singh, J. K (2017).** Socio-Demographic Factors of Household Heads Associated With Knowledge of Food Safety among Residents of Butwal Sub-Metropolitan City of Nepal.
- Geetha, K., Yatnatti, S., Vijayalakshmi, D., & Dittrich, C. (2020).** Food Consumption Practices of Men and Women across Rural-Urban Interface of South Indian Megacity Bangalore. *European Journal of Nutrition & Food Safety*, 1-9.
- Glaser, A. N. (2013).** High-yield biostatistics, epidemiology, and public health. Lippincott Williams & Wilkins.
- Mendagudali, R. R., Akka, K. D., Swati, I. A., Shedole, D. T., & Bendigeri, N. A. (2016).** Knowledge, attitude, and practices of food safety among women of Khaza bazar, the rural field practice area, Kalaburagi, Karnataka. *International Journal of Medical Science and Public Health*, 5(3), 516-520.
- Medrano-Felix, A., Martinez, C., Castro-del Campo, N., Leon-Felix, J., Peraza-Garay, F., Gerba, C. P., & Chaidez, C. (2015).** Impact of prescribed cleaning and disinfectant use on microbial contamination

in the home. *Journal of applied microbiology*, 110(2), 463-471.

Naeem, N., Raza, S., Mubeen, H., Siddiqui, S. A., & Khokhar, R. (2018). Food safety knowledge, attitude, and food handling practices of household women in Lahore. *Journal of Food Safety*, 38(5), e12513.

Riaz, B. K., Alim, M. A., Islam, A. S., Amin, K. B., Sarker, M. A. B., Hasan, K., ... & Khanam, R. (2016). Role of courtyard counselling meeting in improving household food safety knowledge and practices in Munshiganj district of Bangladesh. *Nagoya journal of medical science*, 78(4), 387.

Sanlier, N., & Baser, F. (2020). The Relationship among Food Safety Knowledge, Attitude, and Behavior of Young Turkish Women . *Journal of the American College of Nutrition*, 39(3), 224-234.

Sharmin, S., Hamid, N. A. B. A., & Muda, W. A. M. B. W. (2019). Prevalence and Associated Factors of Food Insecurity among Women Garment Factory Workers in Bangladesh. *Journal of Food Security*, 7(1), 28-32.

Son R, Mohhiddin O, Toh P& Chai L,(2015). Food court hygiene assessment

and food safety knowledge, attitudes and practices of food handlers in Putrajaya.

Soon, J. M., Wahab, I. R. A., Hamdan, R. H., & Jamaludin, M. H. (2020). Structural equation modelling of food safety knowledge, attitude and practices among consumers in Malaysia. *Plos one*, 15(7), e0235870.

Talaei, M., Holakouie-Naieni, K., Rahimi-Foroushani, A., & Masoumi-Asl, H. (2015). Knowledge, attitude and practice of people about foodborne outbreak in Isfahan city, Iran. *Journal of Food Safety and Hygiene*, 1(2), 39-45.

Thelwell-Reid, M. (2014). Food Safety Knowledge and Self-Reported Practices of Food Handlers in Jamaica. Walden University.

Ucar, A., Yilmaz, M. V. & Cakiroglu, F. P., (2016), 'Food Safety – Problems and Solutions', in H.A. Makun (ed), Significance, Prevention and Control of Food Related Diseases, viewed October 2016, from <https://www.researchgate.net/publication/301321750>.