

Bridging the Gap: Food Safety knowledge of Geriatric Women in the Home Kitchen

Amany Mahmoud Ebrahim Abdelaziz ^{(1)*}, Eman Shokry Abd-Allah ⁽²⁾, Noha Gamal El-Sayed Ghoniem ⁽³⁾

¹ Demonstrator at Faculty of Nursing, Zagazig University, Egypt.

² Professor of Community & Gerontological Nursing, Faculty of Nursing, Zagazig University, Egypt.

³ Department of Gerontological Nursing, Faculty of Nursing, Zagazig University, Egypt.

*Corresponding author: Amany Mahmoud Ebrahim Abdelaziz

Abstract

Background: Older adults face a disproportionately higher risk of hospitalization, severe complications, and mortality from foodborne infections. **Aim of the study:** Assess food safety knowledge of geriatric women in the home kitchen. **Subjects and Methods: Research design:** descriptive research. **Setting:** The study was conducted at Al-Khudariyyah village, Egypt. **Subjects:** A purposive sample was used. The study subjects were 160 rural geriatric women. **Tools of data collection: Tool I:** structured interview questionnaire, **Tool II:** food safety knowledge instrument.

Results: The study revealed that 75.6% of participants had an unsatisfactory level of total knowledge regarding food safety in the home kitchen.

Conclusion: There was a highly statistically significant association between geriatric women's total food safety knowledge and their sociodemographic characteristics, including age, education, income, living conditions, and marital status, as well as their health and food safety profile, including history of chronic disease, gastrointestinal problems, changes in the sense of smell, difficulty chewing or swallowing. **Recommendations:** Designing educational programs to improve food safety knowledge among geriatric women in the home kitchen.

Keywords: Food Safety, Geriatric Women, Home Kitchen, knowledge.

How to cite this article: Abdelaziz AME, Abd-Allah ES, Ghoniem NGE. Bridging the Gap: Food Safety knowledge of Geriatric Women in the Home Kitchen. *Int J Drug Deliv Technol.* 2026;16(70s): 48-58. DOI: 10.25258/ijddt.16.70s.6

safety measures are not followed (World Health Organization, 2024).

Introduction

Older adults represent a steadily growing segment of the Egyptian population. Recent national statistics indicate that Egypt is home to approximately 9.3 million older adults, accounting for 8.8% of the total population, with projections estimating an increase to 17.9% by 2052. In 2024, life expectancy reached 69.1 years for men and 74.1 years for women. Older men numbered approximately 4.6 million, representing 8.5% of the male population, whereas older women reached about 4.7 million, accounting for 9.2% of the female population (CAPMAS, 2024).

The food consumed daily has a direct influence on human health and well-being, making its quality and safety essential determinants of a healthy life. Although food provides the nutrients required for growth, development, and the maintenance of normal physiological functions, it may also serve as a vehicle for infectious agents and other health hazards if not handled properly. This risk is particularly evident in domestic kitchen environments, where routine activities such as food handling, preparation, and cooking can increase the likelihood of contamination when appropriate food

Foodborne diseases continue to represent a significant global public health challenge, with a considerable proportion of outbreaks attributed to inadequate food safety knowledge and improper food-handling behaviors during food preparation, particularly in domestic settings (Menezes et al., 2024). Consequently, ensuring food safety has become a fundamental public health priority. Food safety encompasses the implementation of appropriate conditions and hygienic practices throughout food handling, preparation, and storage to maintain food quality and minimize contamination. These measures are intended to reduce exposure to biological hazards, including bacteria and viruses, as well as chemical contaminants such as pesticide residues and heavy metals, thereby lowering the risk of foodborne illnesses (Helmy et al., 2023).

The domestic kitchen is considered one of the most critical environments in the household for the spread of foodborne pathogens and cross-contamination. In addition to harboring a complex microbial ecosystem that transfers foodborne infection and influenced by food

Bridging the Gap: Food Safety knowledge of Geriatric Women in the Home Kitchen

type, cleaning habits, and household demographics. This is despite estimates of the proportion of food poisoning cases initiating in the household ranging from 12-17% to 50-80%, Contamination of several foods, particularly raw foods, consumed in the domestic kitchen with naturally occurring pathogenic microorganisms is inevitable (McKernan, Lavelle and Dean, 2022& Liu et al., 2023).

Knowledge refers to the factual information and understanding an individual possesses regarding a particular subject. In the context of food safety, it includes awareness of safe food-handling practices, contamination hazards, appropriate cooking and storage conditions, methods for preventing cross-contamination, and the mechanisms through which foodborne illnesses occur. Food safety knowledge is also defined as the cognitive domain that encompasses awareness, comprehension, and recall of food safety concepts that influence food-handling behaviors (WHO & PAHO, 2021; Idris et al., 2024).

Gerontological nurses play a pivotal role in protecting the health and well-being of older adults by promoting safe food practices across different care settings. Drawing on their expertise in gerontology, nutrition, and infection prevention and control, they ensure that meals provided to older adults are nutritionally adequate and are handled, prepared, stored, and served in ways that reduce the risk of contamination and foodborne illnesses. Their contribution is essential to maintaining the safety and quality of food consumed by older adults (Roy et al., 2023; Marklinder et al., 2025).

Aim of the Study

The aim of this study was to assess geriatric women's knowledge regarding food safety in the Home kitchen.

Research Questions

1. What is the level of knowledge among geriatric women's regarding food safety in the domestic kitchens?
2. Is there a relationship between food safety knowledge and the socio-demographic characteristics of older women?

Subjects and Methods

Research-design

A descriptive study research design was utilized in the current study.

Setting

The study was conducted in Al-Khudariyyah village, Sharkia Governorate, which was randomly selected from

El-Ibrahimiya Center using a multistage cluster sampling technique.

Study Subjects

A purposive sample of 160 geriatric women was recruited from the previously mentioned setting. Eligible participants were aged 60 years and older, involved in home food preparation or cooking at least once per week, able to communicate clearly, and willing to participate in the study. Geriatric women with memory disorders, severe psychiatric disorders, physical disabilities, or visual and hearing impairments were excluded.

Sample size calculation:

Based on a target population of 1,326 older adults in the previously mentioned setting, and assuming a statistical power of 80% with a 95% confidence level ($\alpha = 0.05$), the minimum required sample size was estimated to be 145 participants. To compensate for a potential 10% non-response or attrition rate (15 participants), the final sample size was adjusted to 160 participants. The sample size calculation was performed using Epi Info software, version 7.2.5.0. These parameters were informed by evidence indicating that 88% of older adults perceived themselves to be at low risk of foodborne illness (Evans & Redmond, 2019).

Tools of data collection

Tool I: Structured Interview questionnaire:

Part 1: Demographic data of geriatric women

This section covered the demographic characteristics of the participating geriatric women. It comprised six items addressing age, marital status, educational attainment, monthly income, living arrangements, and previous occupation.

Part 2: Health profile of older adult women

The second part involved questions related to the history of chronic diseases, types of medications used and current gastrointestinal, smell, taste, chewing, or swallowing problems.

Tool II: Food Safety Knowledge Instrument

This instrument was developed by Byrd-Bredbenner et al. (2007) and consisted of 39 questions grouped into five discrete subcategories, as follows:

A. Cross Contamination Prevention and Disinfection Procedures

The first section assessed knowledge regarding hygienic behaviors, proper use of cutting boards, dishcloths, and disinfectants to minimize microbial spread, correct handwashing techniques and appropriate times for hand washing, safe handling of raw meat, poultry, and seafood and personal hygiene and health conditions of food handlers.

B. Safe Times and Temperatures for Cooking and Storing Food

The second Section assessed knowledge related to appropriate times and temperatures for safe cooking, storage, and food handling, safe internal cooking temperatures for different food types of, as well as proper refrigeration and freezing temperatures

C. Foods that Increase the risk of Foodborne Disease

The third section assessed knowledge about foods that should be avoided or handled with particular caution, especially by high-risk individuals and high-risk foods, such as undercooked eggs, unpasteurized milk, raw seafood, improperly canned foods, and ready-to-eat foods stored at unsafe temperatures.

D. Groups at Greatest Risk for Foodborne Disease

The fourth section evaluated awareness of older women regarding groups that require stricter food safety precautions and reasons for their increased vulnerability.

E. Common Sources of Foodborne Disease Pathogens

The fifth discrete assessed knowledge of the relationship between common foodborne pathogens and their associated food sources, including *Salmonella*, *Listeria monocytogenes*, *Escherichia coli*, and *Staphylococcus aureus*.

Scoring system:

The questionnaire contained 39 questions. Four questions {10,11,28,31} were scored as follows: a completely correct answer scored 2 points, an incompletely correct answer scored 1 point, and an incorrect answer scored 0 point. The remaining 35 questions were scored as 1 point for a correct answer and 0 point for an incorrect answer. The total possible score was 43 points. Scores were summed and converted into percentage scores and classified as follows:

- **Satisfactory knowledge:** $\geq 60\%$ (26-43 points).
- **Unsatisfactory knowledge:** $< 60\%$ (0-25 points).

Tools validity and reliability

Following the development of the study tools, they were reviewed by a panel of three experts specializing in Gerontological and Community Health Nursing, as well as Biochemistry and Nutrition at the Faculty of Medicine, Zagazig University. The experts assessed the instruments in terms of relevance, clarity, comprehensiveness, and ease of understanding, thereby establishing their content validity. All suggested revisions were subsequently incorporated. Internal consistency reliability of the questionnaire was evaluated using Cronbach's alpha coefficient.

Pilot study:

A pilot study was conducted on 10% of the total study sample (15 geriatric women) to assess the

feasibility and practicality of the research tools. The time required to complete the questionnaire ranged from 20 to 45 minutes. Participants were randomly selected from the same study setting and were excluded from the final study sample.

Administrative and ethical considerations:

The study was approved by the Ethics Committee of faculty of nursing at Zagazig university, (code: M.D.ZU.NUR/267/12/6/2025). Participation was voluntary, Confidentiality and anonymity of the collected data were assured, and the information was used solely for research purposes.

Statistical analysis

Data analysis was performed using Microsoft Excel and the Statistical Package for Social Science (SPSS) version 25. Descriptive statistics were used to present the data, including frequencies and percentages for categorical variables, as well as mean ($\bar{X}$) and standard deviation (SD) for quantitative variables. The Chi-square test was applied to examine associations between variables. Pearson's correlation coefficient r was used to assess the relationship between the studied variables. In addition, a linear regression model was conducted to identify predictors of geriatric women's knowledge regarding food safety in the home kitchen. Statistical significance was determined as follows: P-value ≥ 0.05 was considered not significant (NS), P-value < 0.05 was considered significant (S), and P-value < 0.01 was considered highly significant (HS).

Results:

Table (1) shows that 82.5% and 86.3% of the studied older adult women gave incorrect answers regarding the best way to prevent food poisoning after using a cutting board to slice raw meat, chicken, or fish and the best way to wash dishes to prevent food poisoning, respectively. Additionally, 80.0% and 79.4% of them provided incorrect answer regarding the proper procedure for cleaning kitchen counters to prevent food poisoning and whether a person with a sore on the back of hand should prepare food for others, respectively. In contrast, 62.5% and 56.8% of the participants gave incompletely correct answers regarding individuals who should not prepare food for others to prevent food poisoning and the need to wash hands after touching certain objects, respectively.

Table (2) shows that 76.3% and 61.3% of the studied older adult women gave incorrect answers regarding the recommended freezer temperature for preventing food poisoning and the appropriate method for storing a meal until it is ready to be eaten when a family member is several hours late for a hot meal,

Bridging the Gap: Food Safety knowledge of Geriatric Women in the Home Kitchen

respectively. Also, 75.0% and 67.5% of the participants provided incorrect answers regarding foods considered safe when cooked to the recommended internal temperature and the most accurate method for determining whether hamburgers are sufficiently cooked, respectively. Furthermore, 61.3% and 63.7% of the participants provided incorrect answers regarding the safest method for thawing a frozen roast and the safest method for cooling a large pot of hot soup, respectively.

Table (3) shows that 64.4% of the studied older adult women gave incorrect answers regarding the food least likely to cause food poisoning. In contrast, 63.1% of the participants provided incompletely correct answer regarding foods that increase a person's risk of food poisoning. Regarding groups at the greatest risk for foodborne diseases, 60.6% of the studied older adult women gave incorrect answer regarding foods that pregnant women, infants, and children do not need to avoid, while 61.2% provided incompletely correct answers regarding individuals who are more likely to become sick or seriously ill from harmful germs in food.

Table (4) shows that 68.8% and 71.3% of the studied older adult women provided incorrect answers regarding how food can be made safe if it contains salmonella and which food is most commonly associated with botulism, respectively. Also, 76.9% and 70.0% of the participants gave incorrect answer foods most likely associated with listeria and campylobacter bacteria, respectively.

Figure (1) displays that 75.6% of the studied older adult women had an unsatisfactory level of total knowledge regarding food safety in the domestic kitchen, while 24.4% had a satisfactory level of total knowledge.

Table (5) illustrates that there was a highly statistically significant relation between the older adult women's total knowledge regarding food safety and their age, level of education, income, and living condition ($P < 0.01$). Also, a statistically significant relation was found with their marital status at ($P < 0.05$).

Table (6) reveals that there was a highly statistically significant relation between older adult women's knowledge regarding food safety and their health and food safety profile, including history of chronic disease, gastrointestinal problems, changes in sense of smell over the past year, difficulty chewing or swallowing, and attended at food safety training ($P < 0.01$). Additionally, a statistically significant relation was observed with history of food poisoning during the past year at ($P < 0.05$).

Discussion

The findings of this study elucidates that most of the geriatric women provided incorrect responses regarding the prevention of cross-contamination, specifically concerning the sanitation of cutting boards after slicing raw meat, poultry, or fish and proper dish washing techniques. Such results might be attributed to lack of formal food safety training, leading to dependence on experiential knowledge rather than evidence-based protocols.

These results align with **Azanaw et al. (2021)**, who reported that a majority of participants in Gondar, Ethiopia, were unaware of proper cleaning methods for food-contact equipment, with over two-thirds failed to identify the correct washing procedures. Similarly, **Lai et al. (2023)** reported that over half of the participants in China utilized inadequate cleaning techniques, such as rinsing with water only or knife scraping, which leaves surfaces prone to contamination.

Furthermore, approximately, most of participants in the current study provided incorrect responses regarding the safety of preparing food with an open hand sore. This result might be attributed to cultural perceptions that categorize minor wounds as insignificant, particularly when covered, thereby reducing the perceived risk of cross-contamination. This finding aligns with **Abdalkhalig et al. (2021)**, who conducted a study in Khartoum State, Sudan and reported that nearly half of the participants failed to recognize the necessity of properly covering cuts or sores during food preparation.

In the same vein, the current study revealed that less than two-thirds of older women provided incomplete responses regarding individuals who necessitate excluded from food preparation. This might be attributed to reliance on informal learning sources, such as familial habits and community norms, rather than structured health education. Such sociocultural environments may normalize unsafe behaviors and lower the perceived urgency of strict exclusion protocols. These results are consistent with **Osaili et al. (2018)**, who conducted a study in Saudi Arabia and showed that participants demonstrated only a partial understanding of health-related exclusion criteria.

In the current study, slightly more than half of geriatric women demonstrated incomplete response regarding the need to wash hands following contact with various objects. This might be linked to age related changes and chronic comorbidities, which can indirectly impair cognitive functions such as memory and attention, thereby hindering the accurate recall of all situations requiring handwashing. This finding is consistent with a study conducted by **Osaili et al. (2021)** in Jordan, where

Bridging the Gap: Food Safety knowledge of Geriatric Women in the Home Kitchen

reported a similar lack of comprehensive hygiene knowledge among 56% of the study population.

The present study revealed that approximately three-quarters of the participants provided incorrect responses regarding the recommended freezer temperature for food safety. This result might be attributed to socioeconomic constraints, especially living in households where access to modern refrigerators with accurate digital temperature indicators is limited. Consequently, these individuals may lack the necessary tools to monitor and regulate freezer temperature according to established safety standards. In agreement with these findings, **Ayaz et al. (2018)** revealed that 69.8% of the respondents in Saudi Arabia were unaware of correct freezer temperatures. Similarly, previous studies by **Osaili et al. (2022)** in United Arab Emirates and **Mkhungo et al. (2018)** in South Africa found that 75% of the participants lacked knowledge regarding the proper operating temperatures for refrigeration units.

The study findings showed that less than two-thirds of participants provided incorrect responses regarding the safe storage of meals intended for delayed consumption. This may reflect socio-cultural norms within extended families, where older adults often prioritize immediate availability of warm meals for all members. In these contexts, maintaining family domestic convenience and traditional roles may outweigh strict adherence to food safety recommendations. These results are consistent with a previous study in Lebanon. A study conducted by **Hassan et al. (2018)** reported that 49.5% of the participants utilized improper meal storage practices, frequently keeping food at room temperature on counters or inside a lidded oven. Similarly, **Subuh et al. (2025)** revealed that nearly three-fifths of the participants lacked knowledge regarding how to store a meal until consumption.

Furthermore, less than two-thirds of the study participants incorrectly identified the safe method for thawing a frozen roast. This knowledge deficit might be related to long-standing cooking habits developed over time; older adults often favor perceived convenience and efficiency when preparing meals, particularly when managing large multi-generational households with restricted physical space. In these context, thawing meat at room temperature is prioritized as a more accessible alternative to the more time-intensive refrigeration thawing method.

This finding is consistent with **Carstens et al. (2022)**, who reported that 67.4% of respondents in the United States using inappropriate defrosting techniques. Similarly, **Nabwiire et al. (2023)** conducted a study in the United States and found that 44.6% of the participants

lacked knowledge of safe thawing methods. In the same line, the study conducted by **Siddika (2026)** in Bangladesh and revealed that 57.4% of participants demonstrated incorrect thawing practices. Conversely, **Jevšnik et al. (2022)** in Slovenia declared that 52% of the participants correctly identified safe thawing methods. Such variations across the literature may be attributed to differences in study populations, socioeconomic conditions, and methodological Frameworks used to assess food safety knowledge and behaviors.

The present study revealed that more than half of geriatric women failed to accurately identify safe food choices for vulnerable populations, such as pregnant women and infants. This finding suggests that age-related cognitive factors may impede the updating of health knowledge leading to prioritize long-standing culturally transmitted food safety practices over updated evidence-based guidelines. Furthermore, lower educational attainment and limited previous formal food safety training among most participants likely reinforces a reliance on traditional practices. Similarly, the study conducted by **Cvetković et al. (2022)** in Serbia reported that 59% of participants demonstrated a similar lack of knowledge regarding safe food choices for high-risk populations. In contrast, **Msrahi & Turkistani (2025)** in Saudi Arabia found that 68.5% of participants correctly identified these risks. This discrepancy might be attributed to prior exposure to formal food safety training and guidance provided by official authorities, such as the Ministry of Health.

The current study shows that approximately two-thirds of the participating geriatric women lacked specific knowledge regarding the handling of salmonella-contaminated food. This result might be linked to the complexity of pathogen-specific food safety concepts, which require a deeper level of understanding than general hygiene practices. In contrast, **Al-Shabib et al. (2021)** found that 60.1% of participants demonstrated awareness of Salmonella safety measures. This discrepancy might be explained by the composition of the study populations; as over half of the participants in the Al-Shabib et al. cohort were from medical or health-related fields. Such backgrounds provide greater exposure to microbiology and formal food safety education, thereby enhancing their understanding of pathogen-specific preventive measures.

Approximately three-quarters of the participants in the present study incorrectly identified the primary food sources associated with botulism. A plausible explanation for this finding might be related to the low incidence of the condition, which limits opportunities for

Bridging the Gap: Food Safety knowledge of Geriatric Women in the Home Kitchen

experiential learning among older adults and limited access to accurate and reliable information with difficulty understanding detailed food safety information. These findings contrast with those of **Alhuzaimi et al. (2025)**, who found that 80.3% of participants in Riyadh, Saudi Arabia correctly identified food as the source of botulism. This discrepancy may be related to the direct exposure to a botulism outbreak, which coupled with public health information from the ministry of health, significantly increased awareness.

Conclusion & Recommendations

In conclusion, most geriatric women demonstrated unsatisfactory knowledge, specifically regarding cross-contamination prevention, disinfection protocols, time-temperature control, and pathogen identification. Therefore, it is recommended to integrate food safety counseling into routine healthcare services and strengthen individualized counseling with practical demonstration during clinic visits to improve safe food handling practices.

Acknowledgment

Special thanks are given to all older adult women who took part in the research and made it possible.

Declaration of conflicting interest

The authors declare that there is no conflict of interest.

Funding source

For the research, the author received no financial support authorship, publication of this article and/or publication of this article.

Table (1): Frequency distribution of the studied older adult women according to their knowledge regarding cross-contamination prevention and disinfection procedures (**n=160**).

Items		No.	%
The best way to keep from getting food poisoning from fresh fruits and vegetables is to wash them with	Correct answer	38	23.8
	Incorrect answer	122	76.2
The best way to prevent food poisoning after having used a cutting board to slice raw meat, chicken or fish.	Correct answer	28	17.5
	Incorrect answer	132	82.5
The best way to wash dishes to	Correct answer	22	13.8

prevent food poisoning, is to	Incorrect answer	138	86.3
When should kitchen counters be washed, rinsed, and sanitized	Correct answer	37	23.1
	Incorrect answer	123	76.9
Procedure for cleaning kitchen counters to prevent food poisoning	Correct answer	31	19.4
	Incorrect answer	129	80.6
To prevent food poisoning, how often should the kitchen sink drain in home be sanitized	Correct answer	61	38.1
	Incorrect answer	99	61.9
The most hygienic way to wash your hands	Correct answer	36	22.5
	Incorrect answer	124	77.5
If you have a sore on the back of your hand, should you prepare food for other people	Correct answer	33	20.6
	Incorrect answer	127	79.4
Which should not be done when storing raw meat, fish, or poultry in the refrigerator	Correct answer	73	45.6
	Incorrect answer	87	54.4
Individuals should not prepare food for other people to prevent food poisoning	Complete correct	7	4.4
	Incomplete correct	100	62.5
	Wrong answer	53	33.1
When preparing food, you should wash your hands after touching which of these	Complete correct	19	11.9
	Incomplete correct	91	56.8
	Wrong answer	50	31.3
Mean SD		3.76±3.04	

Table (2): Frequency distribution of the studied older adult women according to their knowledge of safe times and temperatures for cooking and storing food (**n=160**).

Items		No.	%
	Correct answer	85	53.1

Bridging the Gap: Food Safety knowledge of Geriatric Women in the Home Kitchen

The practice is most likely to cause food poisoning	Incorrect answer	75	46.9
When is it safest to place refrigerated foods in your cart when grocery shopping	Correct answer	63	39.4
	Incorrect answer	97	60.6
The recommended freezer temperature for preventing food poisoning	Correct answer	38	23.7
	Incorrect answer	122	76.3
The actions if the electricity goes off and the meat, chicken, or seafood in the freezer thaws and becomes warm.	Correct answer	69	43.1
	Incorrect answer	91	56.9
The most important way to prevent food poisoning	Correct answer	64	40.0
	Incorrect answer	96	60.0
For ground beef to be safe to eat, it needs to be cooked until its internal temperature reaches	Correct answer	64	40.0
	Incorrect answer	96	60.0
The maximum temperature of refrigerators should be preserving the safety of the food	Correct answer	63	39.4
	Incorrect answer	97	60.6
The method to store the meal until the person is ready to eat it, if the family member is going to be several hours late for a hot meal	Correct answer	62	38.7
	Incorrect answer	98	61.3
All foods are considered safe when cooked to an internal temperature	Correct answer	40	25.0
	Incorrect answer	120	75.0
The most accurate way of determining	Correct answer	52	32.5

whether hamburgers are cooked enough	Incorrect answer	108	67.5
Which food does not need to be refrigerated to prevent food poisoning	Correct answer	69	43.1
	Incorrect answer	91	56.9
To prevent food poisoning, how long should leftover foods be heated	Correct answer	73	45.6
	Incorrect answer	87	54.4
What is the least safe method for thawing a frozen roast	Correct answer	62	38.7
	Incorrect answer	98	61.3
What is the safest method for cooling a large pot of hot soup	Correct answer	58	36.3
	Incorrect answer	102	63.7
Mean SD	5.38±2.49		

Table (3): Frequency distribution of the studied older adult women according to their knowledge regarding Foods that increase risk of foodborne disease and groups at greatest risk for foodborne disease (n=160).

Items		No.	%
Foods that increase risk of foodborne disease			
Chilling or freezing eliminates harmful germs in food	Correct answer	73	45.6
	Incorrect answer	87	54.4
Food is least likely to cause food poisoning	Correct answer	57	35.6
	Incorrect answer	103	64.4
Eating which of these foods will increase a person's risk of food poisoning	Complete correct	9	5.6
	Incomplete correct	101	63.1
	Incorrect answer	50	31.3
Mean SD	1.55±1.03		
Groups at greatest risk for foodborne disease			
People should be especially careful	Correct answer	66	41.2

Bridging the Gap: Food Safety knowledge of Geriatric Women in the Home Kitchen

about not eating raw seafood if they have	Incorrect answer	94	58.8
Foods do pregnant women, infants, and children do not need to avoid	Correct answer	63	39.4
	Incorrect answer	97	60.6
Compared to most people, which of these individuals are more likely to get sick or seriously ill from harmful germs in food	Complete correct	15	9.4
	Incomplete correct	98	61.2
	Incorrect answer	47	29.4
Mean SD		1.60±1.14	

Table (4): Frequency distribution of the studied older adult women according to their knowledge regarding common food sources of foodborne disease pathogens (n=160).

Items		No.	%
Salmonella can cause food poisoning. How can a food be made safe if it has Salmonella in it	Correct answer	50	31.2
	Incorrect answer	110	68.8
Staphylococcus that causes food poisoning are most likely associated with which food	Correct answer	65	40.6
	Incorrect answer	95	59.4
Botulism is a disease that most likely associated with which food	Correct answer	46	28.7
	Incorrect answer	114	71.3
Listeria bacteria are most likely associated with which food	Correct answer	37	23.1
	Incorrect answer	123	76.9
Harmful E. coli bacteria are most likely associated with which food	Correct answer	71	44.4
	Incorrect answer	89	55.6
Trichinosis is most likely associated with which food	Correct answer	48	30.0
	Incorrect answer	112	70.0
Campylobacter bacteria are most likely associated with which food	Correct answer	59	36.9
	Incorrect answer	101	63.1
Contaminating the next food touch with	Correct answer	69	43.1

salmonella if you don't wash hands after touching	Incorrect answer	91	56.9
Mean SD		2.78±1.34	

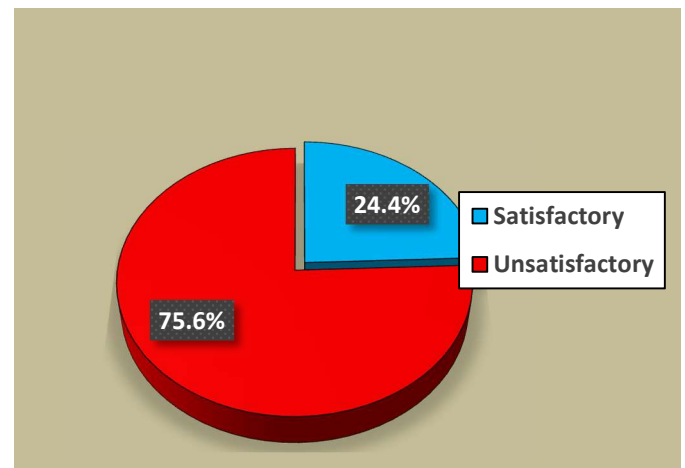


Figure 1. Percentage distribution of the studied older adult women according to their total knowledge regarding food safety in the domestic kitchen (n=160)

Table (5): Relations between the demographic characteristics of the studied older adult women and their knowledge regarding food safety (n=160).

Demographic characteristics		Level of total knowledge score				X ²	P-Value
		Satisfactory (n=39)		Unsatisfactory (n=121)			
		No	%	No	%		
Age (year)	60-<70	39	100.0	58	47.9	33.49	0.00**
	70-<80	0	0.0	55	45.5		
	≥ 80	0	0.0	86	70.6		
Marital status	Marrried	35	89.7	81	66.9	8.64	0.018*
	Widow	43	100.3	33	27.3		
	Divorced	0	0.0	78	64.5		

Bridging the Gap: Food Safety knowledge of Geriatric Women in the Home Kitchen

Level of education	Illiterate	0	0.0	16	13.3	59.7	0.00**
	Primary	0	0.0	19	15.7		
	Preparatory	0	0.0	32	26.4		
	Secondary	28	71.8	54	44.6		
	University	11	28.2	00	0.0		
Income	Not enough	0	0.0	11	95.6	13.6	0.00**
	Enough	31	79.5	51	4.1		
	Enough & save	8	20.5	00	0.0		
Living condition	Alone	16	41.0	17	14.0	13.1	0.00**
	With family	23	59.0	14	86.0	1	

X²= Chi-square test. (*) Significant at p < 0.05. (**) Highly statistically significant at p < 0.01.

Table (6): Relations between the health and food safety profile of the studied older adult women and their knowledge regarding food safety (n=160).

Heath and food safety profile		Level of total knowledge score				X ²	P-Value
		Satisfactory (n=39)		Unsatisfactory (n=121)			
		No.	%	No.	%		
History from chronic disease	Yes	13	33.3	120	99.2	91.4	0.00**
	No	26	66.7	108	8.8		

History from gastrointestinal problems	Yes	22	56.4	17	88.4	19.5	0.00**
	No	17	43.6	14	11.6		
History from change of smell over the past year	Yes	8	20.5	85	69.4	28.7	0.00**
	No	31	79.5	37	30.6		
History from difficulty chewing or swallowing	Yes	8	20.5	11	83.5	5.3	0.00**
	No	31	79.5	20	16.5		
History from food poisoning during the past year	Yes	4	10.3	34	28.1	5.85	0.023*
	No	35	89.7	87	71.9		
Attended food safety training	Yes	14	35.9	0	0.0	47.6	0.00**
	No	25	64.1	121	100.0		

X²= Chi-square test. (*) Significant at p < 0.05. (**) Highly statistically significant at p < 0.01.

Byrd-Bredbenner, C., Wheatley, V., Schaffner, D., Bruhn, C., Blalock, L. and Maurer, J. (2007). Development and Implementation of a Food Safety Knowledge Instrument. *Journal of Food Science Education*, 6(3), pp.45-55. DOI: [10.1111/j.1541-4329.2007.00029.x](https://doi.org/10.1111/j.1541-4329.2007.00029.x)

- Central Agency for Public Mobilization and Statistics [CAPMAS]** :Total population of Egypt as of 2024, by age group. [online] .2024[cited 2026 May5]; Retrieved from: <https://www.capmas.gov.eg>.
- Helmy, Y. A., El-Adawy, H., Sanad, Y. M., & Ghanem, M. (2023).** Editorial: Food safety and public health. *Frontiers in microbiology*, 14, pp.1- 4.
- Liu, H., Ma, T., Liu, Z., Li, Q., Shen, B., Xin, J., Feng, C., Liu, M., & Liu, L. (2023).** Quantitative risk assessment for bacterial community in residential kitchens. *Building and Environment*, 228, 109841. <https://doi.org/10.1016/j.buildenv.2022.109841>
- Marklinder, I., Wersen, V., & James, K. (2025).** Food safety and healthcare professionals: The need for education and research. *Food Control*, 171, 111118. <https://doi.org/10.1016/j.foodcont.2024.111118>
- Menezes, D. (2024).** Identifying and Managing Food Potential Hazards. *Journal of Food: Microbiology, Safety & Hygiene*, 9(1), 276. <https://doi.org/10.35248/2476-2059.24.9.276>
- Roy, N., Mollick, K., Siddiky, A., Aktarujjaman, M., Hossain, E., Islam, F., & Kumar, M. (2023).** Exploring food safety knowledge, attitudes, and practices of nursing and medical students: Insights from a cross-sectional study in Bangladesh. *Journal of Food Safety*. <https://doi.org/10.1111/jfs.13098>.
- World Health Organization. (2024).** *Inception Meeting of the WHO Alliance for Food Safety*. Geneva: WHO. Available at: <https://www.who.int/initiatives/who-alliance-for-food-safety/inception-meeting> (Accessed: 1 December 2025 at 10:00 AM).
- Idris, Y. M. A., Mariod, A. A., Mohamedin, K. F., & Alshafi, A. S. (2024).** Food safety knowledge and practices of food handlers at a public Sudanese university. *Food Systems*, 7(2), 263–267. <https://doi.org/10.21323/2618-9771-2024-7-2-263-267>
- World Health Organization (WHO) & Pan American Health Organization (PAHO). (2021).** *Five Keys to Safer Food Manual*. Geneva: WHO. Available at: <https://www.who.int/publications/i/item/9789241594639> (Accessed: 22 November 2025 at 10:00 AM).
- McKernan, C., Lavelle, F., & Dean, M. (2022).** Food safety considerations using SMART devices in domestic kitchens. *Proceedings of the Nutrition Society*, 81. <https://doi.org/10.1017/s0029665122001872>.
- Evans, E. W., and Redmond, E. C. (2019).** 'Older adult consumers' attitudes and perceptions of risk, control, and responsibility for food safety in the domestic kitchen', *Journal of food protection*, 82(3), 371-378.
- Azanaw, J., Gebremichael, B., & Assefa, H. (2021).** Food safety knowledge, attitude, and practice of college students, Ethiopia, 2019: A cross-sectional study. *Environmental Health Insights*, 14, 1–8. <https://doi.org/10.1177/1178630220986152>
- Abdalkhalig, L. A., Babiker, M. M. H., Ola, I. E., & Abdalla, M. A. (2021).** Assessment of knowledge, attitudes and practices of consumers regarding food safety in Bahri Locality, Khartoum State, Sudan. *International Journal of Research - GRANTHAALAYAH*, 9(9), 224–237. <https://doi.org/10.29121/granthaalayah.v9.i9.2021.4261>
- Lai, H., Tang, Y., Ren, F., Jiao, X.-a., & Huang, J. (2023).** Evaluation of hygiene practice for reducing Campylobacter contamination on cutting boards and risks associated with chicken handling in kitchen environment. *Foods*, 12(17), 3245. <https://doi.org/10.3390/foods12173245>
- Osaili, T. M., Al-Nabulsi, A. A., & Taybeh, A. O. (2021).** Food safety knowledge, attitudes, and practices among Jordan universities students during the COVID-19 pandemic. *Frontiers in Public Health*, 9, 729816. <https://doi.org/10.3389/fpubh.2021.729816>
- Osaili, T. M., Al-Qahtani, A. I., & Al-Ghamdi, S. M. (2018).** Food safety knowledge and practices among Saudi mothers. *Foods*, 7(12), 193. <https://doi.org/10.3390/foods7120193>
- Osaili, T. M., Saeed, B. Q., Taha, S., Adrees, A. O., & Hasan, F. (2022).** Knowledge, practices, and risk perception associated with foodborne illnesses among females living in Dubai, United Arab Emirates. *Foods*, 11(3), 290. <https://doi.org/10.3390/foods11030290>
- Ayaz, W. O., Priyadarshini, A., & Jaiswal, A. K. (2018).** Food safety knowledge and practices among Saudi mothers. *Foods*, 7(12), 193. <https://doi.org/10.3390/foods7120193>
- Hassan, H. F., Dimassi, H., & Karam, Z. N. (2018).** Self-reported food safety knowledge and practices of Lebanese food handlers in Lebanese households. *British Food Journal*, 120(3), 518–530. <https://doi.org/10.1108/BFJ-04-2017-0239>
- Mkhungo, M. C., Oyediji, A. B., & Ijabadeniyi, O. A. (2018).** Food safety knowledge and microbiological hygiene of households in selected areas of Kwa-Zulu Natal, South

Africa. *Italian journal of food safety*, 7(2), 6887.
<https://doi.org/10.4081/ijfs.2018.6887>

Arabia. *Journal of Health, Population and Nutrition*, 44, 248. <https://doi.org/10.1186/s41043-025-00964-6>

Subuh, N., Ballout, R., Toufeili, I., Kassem, I. I., & Kharroubi, S. A. (2025). Beliefs, Practices, and Knowledge of Household Food Handlers Regarding the Impact of Electricity Outages on Food Safety: Findings from a National Cross-Sectional Study in Lebanon. *Foods*, 14(5), 855. <https://doi.org/10.3390/foods14050855>

Siddika, A. (2026). Evaluation of Knowledge and Practices Related to Safe Food Handling Among Bangladeshi University Students. *International Journal of Safety Research*, 1(1), 6–15. <https://doi.org/10.11648/j.ij.sr.20260101.12>

Nabwiire, L., Shaw, A. M., Nonnecke, G. R., Talbert, J., Chanes, C., Boylston, T., Tarte, R., & Prusa, K. (2023). Beef handling practices among consumers in the U.S. Virgin Islands. *Journal of Food Protection*, 86(9), 100141. <https://doi.org/10.1016/j.jfp.2023.100141>

Jevšnik, M., Pirc, L., Ovca, A., Šantić, M., Raspor, P., & Torkar, K. G. (2022). A multimethod study on kitchen hygiene, consumer knowledge and food handling practices at home. *Processes*, 10(10), 2104–2110. <https://doi.org/10.3390/pr10102104>

Carstens, C. K., Salazar, J. K., Sharma, S. V., Chan, W., & Darkoh, C. (2022). Food safety attitudes, behaviors, and hygiene measures among predominantly low-income parents in Houston, Texas. *Journal of Food Protection*, 85(12), 1745–1755. <https://doi.org/10.4315/JFP-22-179>

Cvetkovic, D., Stojanovic, M., Milic, N., & Petrovic, O. (2022). Knowledge about food safety and handling practices – Lessons from the Serbian public universities. *Slovenian Journal of Public Health*, 61(1), 12–24. <https://sciendo.com/es/article/10.2478/sjph-2022-0020>

Al-Shabib, N. A., Mosilhey, S. H., & Husain, F. M. (2021). Awareness of foodborne pathogens among students: A cross-sectional study in the Kingdom of Saudi Arabia. *Food Control*, 126, 108024. <https://doi.org/10.1016/j.foodcont.2021.108024>

Alhuzaimi, A., Aljamaan, F., Al-Ajwad, F. H., Alabdulkareem, W., Alshahrani, F. S., Altamimi, I., et al. (2025). Public knowledge of food poisoning, risk perception and food safety practices in Saudi Arabia: A cross-sectional survey following foodborne botulism outbreak. *Medicine*, 104(15), e41593. <https://doi.org/10.1097/MD.00000000000041593>

Msrahi, N., & Turkistani, A. (2025). Assessment of the association between foodborne diseases and food safety knowledge and practices among pilgrims during Hajj in Saudi