



Food safety knowledge and practices among Saudi women



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ABSTRACT

The present cross sectional study was conducted on 811 Saudi women to evaluate their food safety knowledge and practices and explore factors affecting them. They reported better food safety practices than knowledge in overall food safety and all parameters except cooking. Personal hygiene was the parameter where they reported higher mean knowledge and practice (63.4% and 73.8%; respectively) with the lowest mean knowledge score in utensils and equipment (49.8%) whereas the lowest mean practice (60.2%) was in cooking. Saudi women with higher studies and those with 60 years and more showed higher mean knowledge and practice score in overall food safety and most parameters than those in other educational levels or age groups with significant variations ($P < 0.05$) among different educational levels except in practicing personal hygiene. Working women showed higher mean knowledge and practice than non working in all parameters with significant variation between their mean knowledge scores except in personal hygiene. Launching a food safety education program and repeating it at specific intervals is recommended.

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1. Introduction

In the developing world, foodborne illness causes an estimated 2.2 million deaths each year, of which 1.9 million are children (WHO/FAO, 2005). About 40% of foodborne illness occurred in home so cases are less likely to be reported (WHO/FAO, 2002). Most cases of foodborne illness are preventable if food protection principles are followed from production to consumption. Given that it is currently impossible for food producers to ensure a pathogen free food supply, the home food preparer is a critical link in the chain to prevent foodborne illness. Several studies in various countries have revealed that consumers have inadequate food safety knowledge and/or practices and most of them reported gaps between their food safety knowledge and practices. (Albrecht, 1995; Bruhn & Schutz, 1999; Fawzi & Shama, 2009; Jay, Comar, & Govenlock, 1999; Mederios, Hillers, Kendall, & Mason, 2001; Redmond & Griffith, 2003; Unusan, 2007).

Although the public is increasingly concerned about food-related risks, the rise in food poisoning cases suggests that people still make decisions of food consumption, food storage and food preparation that are less ideal from a health and safety perspective (McCarthy et al., 2007). Studies have estimated that between 50 and 87% of reported foodborne disease outbreaks have been associated with

the home (Fawzi, 1999; Fawzi & Shama, 2009; Raspor, Jevšnik, & Hlebec, 2006; Redmond & Griffith, 2003; Scott, 1996). These studies have uncovered a lack of food safety knowledge and the need to promote food safety behaviors (Jevšnik, Hoyer, & Raspor, 2008).

Most of the work during the last few years has centred on hazard control in the production sector, but an equal effort was not dedicated to improving the food safety education of consumers (Garayoa, Cordoba, Garcia-Jalon, Sanchez-Villegas, & Vitas, 2005). The need for enhanced food safety education started to be recognized in developed countries with the launch of national initiatives to find ways to educate consumers effectively (Haapala & Probart, 2004).

To the best of our information, there is no national education program in Kingdom of Saudi Arabia to enhance food safety knowledge and practices among home food preparers. Obtaining information on food safety knowledge and practices is essential for the development of effective health education programs in an attempt to reduce the risks associated with improper food handling at home. So, the aim of this study was to evaluate food safety knowledge and practices among Saudi women and explore factors affecting them.

2. Materials and methods

2.1. Subjects selection and recruitments

The present cross sectional study was conducted from October 2011 till June 2012 on 811 Saudi women responsible for food

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preparation for 4625 family members in four provinces of the Kingdom of Saudi Arabia (East, Middle, South and West province).

2.2. Data collection

The research data was collected using a food safety questionnaire of [Fawzi and Shama \(2009\)](#) after its pilot testing and modification to be compatible with the Saudi Community. The questionnaire included questions on demographic characteristics and questions on food safety knowledge and practices that were included under five parameters as follow:-

2.2.1. Questions on food safety knowledge

2.2.1.1. Purchasing and storage

- Raw food of animal origin should be displayed in chillers (**True/False/don't know**)
- Frozen food should be displayed in freezers (**True/False/don't know**)
- Fresh fish should be displayed in ice (**True/False/don't know**)
- Grossly unspoiled food can cause food poisoning (**True/False/don't know**)
- Firstly purchased food should be consumed first (**True/False/don't know**)
- Hot food should not be stored hot in chillers (**True/False/don't know**)
- Opened long life milk should be stored in chillers (**True/False/don't know**)
- Duplication time of food poisoning microorganisms under optimum condition is 10–30 min (**True/False/don't know**)
- Microbial growth is faster in summer than winter (**True/False/don't know**)
- Microbial growth is faster at room temperature than in refrigerators (**True/False/don't know**)
- Microorganisms can not be destroyed in chillers (**True/False/don't know**)
- Microorganisms can not be destroyed in freezers (**True/False/don't know**)

2.2.1.2. Food preparation

- Causes of food poisoning:
 - Keeping prepared salad at room temperature (**True/False/don't know**)
 - Thawing frozen food at room temperature (**True/False/don't know**)
 - Thawing and refreezing of frozen food (**True/False/don't know**)
 - Using the same cutting boards for raw and cooked food (**True/False/don't know**)

2.2.1.3. Food cooking

- It is safer to cook food quantities sufficient for one day (**True/False/don't know**)
- Prepared food should not be kept for >4 h outside the chillers (**True/False/don't know**)
- Causes of food poisoning:
 - Inadequately boiled milk (**True/False/don't know**)
 - Raw or half cooked food of animal origin (**True/False/don't know**)
 - Inadequately reheated cooked food (**True/False/don't know**)

2.2.1.4. Personal hygiene

- Food handling should be avoided during illness (**True/False/don't know**)
- Cooked food should not be tasted by fingers or unclean spoons (**True/False/don't know**)
- To prepare safe food, hands should be:
 - Properly cleaned (**True/False/don't know**)
 - Free of wounds (**True/False/don't know**)
 - With short and clean nails (**True/False/don't know**)
 - Unvarnished (**True/False/don't know**)
- Sources of food contamination with food poisoning microorganisms:
 - Diseased persons (**True/False/don't know**)
 - Apparently health persons (**True/False/don't know**)

2.2.1.5. Utensils and equipment

- Inadequately cleaned and sanitized utensils and equipment can be a source of food poisoning microorganisms (**True/False/don't know**)
- Stainless steel is among the safest food contact surfaces (**True/False/don't know**)

2.2.2. Questions on food safety practices

2.2.2.1. Purchasing and storage

- Reading expiry date before purchasing (**Often/sometimes/no**)
- Purchasing food of animal origin displayed refrigerated (**Often/sometimes/no**)
- Firstly purchased food are consumed first (**Often/sometimes/no**)
- Avoiding storage of cooked food while still hot in chillers (**Often/sometimes/no**)

2.2.2.2. Food preparation

- Washing of salad vegetables (under running water/soaking in water/soaking in water with lemon or vinegar/soaking in water with potassium permanganate)

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