

# Food safety awareness and practices by home makers in Bhubaneswar city

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Food safety, an increasingly important public health issue refers to the conditions and practices that preserve the quality of food to prevent contamination microbes or toxic chemicals resulting in food borne illness. Ensuring food safety at the household level is well accepted and an understanding of the status of the food handling knowledge and practices is needed. The aim of the present study was to examine knowledge and practice related to food safety among women responsible for preparing food at the home level. 110 women of Bhubaneswar city were selected as the sample for the study and assessed by using a structured questionnaire. The study showed that the respondents lack food safety knowledge. As per personal hygiene, though 84.5 per cent women adopt hand washing before cooking only 11.8 per cent did it with soap/sanitizer. The study showed women needed educational programmes and counselling to adopt hygienic food handling practices.

**Key Words :** Food safety, Food borne disease, Hygiene, Safe food handling at home

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## INTRODUCTION

Food safety is defined as the degree of confidence that food will not cause harm to the consumer when it is prepared, served and eaten according to its intended use (FAO/WHO, 2003). Poor food handling and hygiene practices in the domestic kitchen are thought to cause a significant number of food borne illnesses. UNICEF (2009) reported that diarrhoea is the second leading killer of children under five and it is an alarming reminder of the exceptional vulnerability of children in developing countries. The main reasons of children mortality were improper sanitation, unsafe drinking water and improper food handling practices (UNICEF, 2009). Surveys of food borne disease outbreaks worldwide have shown that most cases of food borne diseases occur in handling food

during preparation whether in homes or in food sector (WHO, 2000). Most cases of food borne illnesses are preventable if food protection principles are followed from production to consumption. Since, it is currently impossible for food producers to ensure a pathogen free food supply, the home food preparers is a critical link in the chain to prevent food borne illnesses (Medeiros *et al.*, 2004). Between 50 and 87 per cent of the reported outbreaks of food borne illnesses are associated with food prepared at home (Redmond and Griffith, 2003). Therefore, the critical link in the chain should be home food preparation to prevent contamination during its handling, preparation, and storage.

### Food borne diseases:

Micro-organisms can cause a variety of effects in food products including spoilage, which primarily affects product quality, and food poisoning, which is generally

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caused by pathogens.

A food borne illness (or disease) is exactly what the term indicates - a disease or illness caused by the consumption of contaminated foods or beverages. It would seem rather obvious that a food borne microbial pathogen, or a preformed microbial toxic product, or another poison such as a poisonous chemical that has somehow contaminated the food and/or beverage, leads to one of the many different food borne illnesses (Thomas and Karl, 2008). Most of these diseases are infections, caused by a variety of bacteria, viruses, and parasites. Other diseases are poisonings, caused by harmful toxins or chemicals that have contaminated the food, for example, poisonous mushrooms or heavy metal contamination.

### Food hygiene at home :

Food hygiene is concerned with the hygiene practices that prevent food poisoning. Bas *et al.* (2004) in their study pointed out that the lack of knowledge of microbiological food hazards, temperature ranges of refrigerators, cross contamination and personal hygiene cause food-borne diseases. The five key principles of food hygiene, according to WHO, are:

- Prevent contaminating food with pathogens spreading from people, pets, and pests.
- Separate raw and cooked foods to prevent contaminating the cooked foods.
- Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.
- Store food at the proper temperature.
- Use safe water and raw materials.

## METHODOLOGY

### Objective:

The aim of this study was to assess food safety knowledge and practices among women handling the food at home from urban area of Bhubaneswar city.

### Research design:

The study was conducted in the city of Bhubaneswar, Odisha in between May and June 2015. 110 married female respondents were selected as the sample for the study who were the handler of food at home. Convenience sampling technique was used to collect the data. The survey tool for this study was a well structured survey questionnaire method through

face-to-face interview by the investigator.

## OBSERVATIONS AND ASSESSMENT

Table 1 depicts the demographic profile of the respondents who fall under different category of age groups, educational qualification, occupation, number of family members, type of family and family monthly income.

The cooking and storage of food practices exercised by the respondents are shown in Table 2. It was found that cleaned and stored utensils were not washed before using those in cooking and only 21.81 per cent respondents exercised this practice. Though it was found out 97.27 per cent of home makers stored foods in covered containers but they stored it in room temperature till consumption (90%). 66.36% of the respondents informed that they consume the leftover foods with the next meal and 22.72 per cent stored it till next day. Similar results were found by Sudershan *et al.* (2009). In their study they found 86 per cent of the respondents stored the leftover food and 99 per cent stored it in covered containers. Most of them (89%) leave stored food at room temperature and Consume stored food with next meal (67.8%). 21 per cent consume stored food the next day (Sudershan *et al.*, 2009).

Table 3 illustrates food safety knowledge and practices related to food cooking and handling by the respondents. To assess the attitude towards food poisoning when respondents were asked weather food poisoning can be life threatening, 70.9 per cent agreed it can be, while 21.87 per cent disagreed. The percentages of the right knowledge regarding causes of food poisoning ranged from 21.81 per cent in “thawing and refreezing of frozen food” to 85.45 per cent in the question “inadequately boiled milk”. Food should never be thawed or stored on the counter, since food poisoning micro-organisms grow faster in the middle of the temperature danger zone (21-52°C) than at any other point. The majority of the studied women mentioned that inadequately boiled milk can cause food poisoning (85.45%), followed by “using the same cutting boards for raw and cooked food” (61.81%). The use of the same cutting boards for raw and cooked food of animal and vegetable origin without thorough proper washing can be one of the causes of food poisoning. As a possible cause of food poisoning 40.9 per cent women responded “inadequately reheated cooked food” followed by

“keeping prepared food at room temperature” (36.36%) and “thawing frozen food at room temperature” (23.63%), respectively.

The last part of Table 3 shows the various food safety practices exercised by the women. The least practiced food safety practice was cleaning the vegetables with lemon or vinegar used for salad (2.72%). Soaking the vegetables which are to be consumed raw even in plain water helps in removal of harmful pesticides and other chemicals if any present. 53.63 per cent of the

respondents had the practice of through washing of vegetables in running water before use. Majority of the respondents (91.81%) replied positively to washing of hands after handling raw chicken/meat/fish. Although 36.36 per cent of the sample mentioned that cooked food kept outside in room temperature for more than 4 hours may cause microbial growth, only 12.72 per cent used not to leave their cooked food for longer periods in the kitchen. Leaving cooked food for longer periods in the kitchen constitutes a hazardous practice since food

**Table 1 : Demographic profile of the respondents**

Personal factor	Category	(n=110)	
		Frequency	Percentage (%)
Age	Between 21-30 years	34	30.91
	Between 31-40 years	65	59.09
	Above 40 years	11	10
	Total	110	100
Educational qualification	College level	12	10.90
	Under Graduate	37	33.63
	Post Graduate	35	31.81
	Technically qualified	26	23.66
	Total	110	100
Occupational status	House wife	47	42.73
	Govt. Employee	11	10
	Private Employee	29	26.36
	Others	23	20.9
	Total	110	100
No. of family members	2 - 3 members	62	56.38
	4 - 5 members	34	30.90
	Above 5 members	14	12.72
	Total	110	100
Type of family	Joint Family	13	11.81
	Nuclear Family	97	88.19
	Total	110	100
Family monthly income	Upto Rs.25,000	34	30.91
	Rs.25,001-Rs.35,000	39	35.45
	Rs.35,001-Rs45,000	25	22.73
	Above Rs.45,000	12	10.91
	Total	110	100

**Table 2 : Practices of cooking/storage of food exercised by the respondents**

Cooking/Storage practice	(n=110)	
	Positive answer	
	F	(%)
Rewashing utensils before cooking	24	21.81
Serving of hot foods	56	50.9
Storage of left over foods in covered container	107	97.27
Leaving the stored food in room temperature	99	90
Consume the stored food with the next meal	73	66.36
Consume the stored food next day	25	22.72

poisoning micro-organisms can grow to produce large number and/or toxins sufficient to induce food poisoning. Keeping leftover food for several hours at the kitchen temperature with inadequate reheating was the highest

contributing factor in microbial food poisoning outbreaks. Only 15.45 per cent store promptly all cooked and perishable foods in refrigerator which was not required for immediate consumption. Although the role

**Table 3 : Food safety knowledge and practices of the participants**

(n=110)

Sr. No.	Attitude, knowledge and practices	Right knowledge/practice	
		F	(%)
1.	Can food poisoning be life threatening		
	Yes	78	70.9
	No	24	21.87
	Can't say	08	7.29
2.	Food safety knowledge		
	Causes of food poisoning:		
	Keeping prepared food at room temperature	40	36.36
	Thawing frozen food at room temperature	26	23.63
	Thawing and refreezing of frozen food	24	21.81
	Using the same cutting boards for raw and cooked food	68	61.81
	Inadequately boiled milk	94	85.45
	Inadequately reheated cooked food	45	40.90
3.	Food safety practices		
	Cleaning of salad vegetables by soaking in water with lemon or vinegar	3	2.72
	Wash your hands after touching raw chicken/meat/fish	101	91.81
	Through washing of vegetables in running water before use	59	53.63
	Cleaning counter tops before cooking	76	69.09
	Cleaning counter tops after food preparation	15	13.63
	Boiling of raw milk for at least 5-10 mins	77	70.00
	Not leaving cooked food in kitchen till eating for > 4hrs	14	12.72
	Storing cooked and leftover food in the refrigerator for < 3 days	96	87.27
	Refrigerate promptly all cooked and perishable food (preferably below 5°C)	17	15.45
	Adequate reheating of foods before consuming	90	81.81
	Reheating only the portion for consumption and not the entire lot	89	80.90
	Not using food that has fallen to the floor	63	57.27
	Checking expiry dates of products before using	47	42.72

**Table 4 : Food safety knowledge and practices related to personal hygiene**

(n=110)

Sr. No.	Personal hygiene practices	Right knowledge/practice	
		F	(%)
1.	Avoiding food handling during illness	11	10
2.	Covering of wounds with a waterproof plaster	57	51.81
3.	Hand washing		
	– Before cooking	93	84.54
	– With water only	82	88.17
	– With use of soap/sanitizer	11	11.82
	– After handling raw meat, poultry, fish, sea-foods, eggs and unwashed vegetables	101	91.81
	– After using toilet	108	98.18
	– After sneezing, coughing, blowing the nose, touching the hair or face.	67	60.9
4.	Using separate towel for hand drying in kitchen	48	43.63
5.	Avoiding tasting of cooked food by fingers or unclean spoons	86	78.18

of inadequately boiled milk in causing food poisoning was mentioned by 85.45 per cent of the women only 70 per cent used to boil raw milk for 5-10 minutes after its effervescence. Cleaning counter tops before cooking was practised by 69.09 per cent and 13.63 per cent of the respondents had the practice of cleaning the counter top after cooking. Bacteria may grow on the unclean surface which may contaminate other food stuffs placed later on that surface. Busy work schedule, lack of time and sometimes forgetfulness was reported as the reason behind not to practise the food safety majors.

Regarding safe cooking practices, the highest percentages were in storing cooked and leftover food in the refrigerator for < 3days (87.27%) followed by adequate reheating of food (81.81%) and reheating of a portion sufficient for a meal (80.9%). 42.72 per cent of the respondents reported to check expiry date before using a packaged food item.

Practicing personal hygiene was ranked as the first set of behaviours in maintaining the safety of food and reducing number of food-borne illnesses with washing hands before handling food received the highest rank (Medeiros *et al.*, 2001). Table 4 shows that majority of women recognized the importance of proper hand washing for preparing safe food and cooked food should not be tasted by fingers or placing unclean spoons (78.18%). Significantly higher percentage of respondents recognized that diseased persons and apparently healthy persons are sources of food contamination with food poisoning micro-organisms but only 10 per cent mentioned that they always avoid food handling during their illness since they are solely responsible for the food preparation for their family members. Concerning practicing personal hygiene, majority of the women used to wash their hands after visiting the toilet (98.18%) and 84.54 per cent used to wash hands before food preparation though only 11.82 per cent used to wash with soap/sanitizer. This indicates that large numbers of the women used not to properly clean their hands and used to contaminate them after hand washing. 43.63 per cent the respondents mentioned that they use separate towels in kitchen for hand drying.

### Conclusion:

Women hold the key to ensuring food safety to all provided they are empowered with enabling environment and supported by sound awareness creation endeavours.

Investing in food safety education for them is an essential and wise investment in 'human capital'. Food safety education should be launched to women and repeated at specific intervals to ensure that learnt information is put into the daily life practices.

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