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Does Food Safety Practices At Home Influence Food Borne Illnesses? - A Study in Urban Slum Households, Mysuru

Meghana Narendran[1], Praveen Kulkarni[2], Renuka M[3], Narayana Murthy M R[4]

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Author's Affiliation:
[1]Postgraduate; [2]Assistant Professor; [3]Professor; [4]Professor and Head of department, Dept of Community Medicine, JSS Medical College, Mysore

Correspondence
Dr. Meghana Narendran
meghananaren21@gmail.com

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ABSTRACT

Introduction: Food handlers have been found to play prominent roles in transmission of food-borne diseases at all stages of food production - handling, preparation, storage and serving of food and can pose a significant public health problem. At household levels, women folk form significant individuals who handle the kitchens and action is required to reduce the likelihood of home derived food borne diseases.

Objectives: The study was conducted to assess the knowledge, attitude and practices regarding food safety among women at household level and to assess the association of knowledge, practices and food borne illnesses in their respective families.

Methods: A cross-sectional community based study was done among 203 women in a declared slum of Mysuru city. Pretested semi-structured questionnaire was used to collect Data. Results were represented in form of proportions and Chi square test was used to find significant association between variables.

Results: Adequate knowledge regarding food safety was seen in 183(90.1%), 139(68.3%) showed positive attitude, 122(60.3%) had good practices towards food safety.

Conclusion: Role of females in the prevention of food borne diseases is very important as targeted hygiene is a risk-based approach and need for a hygiene intervention based upon the source of pathogens, the potential routes of transfer within the home and the risk posed by them to a family member.

Key Words: Food safety, nutritional care, food handling, food borne illnesses

INTRODUCTION

Food safety is a growing public health concern of 21st century. Food safeties are the practices and conditions that not only preserves the quality of food but also prevent the contamination with microbes to prevent food borne illness. Food can become contaminated at any point of production and distribution, yet a large proportion of food borne disease incidents are caused by foods improperly prepared or mishandled at home. Unsafe food creates a vicious cycle of diarrhoea and malnutrition, threatening the nutritional status of the most vulnerable. Eating safe and nutritious food is our shared responsibility and it begins at home. It is important to understand behaviour and activities of individuals contribute to the safety of food and how they can decrease the risk of food borne illness.[1,2] The death rate from diarrhoeal diseases almost halved between 2000 and 2015 worldwide, but still caused 1.4 million deaths in 2015 according to the World Health Organisation (WHO) fact sheet on food safety January 2017[3] and India accounts to about 26.2% deaths due to diarrhoeal disease in 2016.[4] In 2015 WHO highlighted the challenges and opportunities associated with food safety under the slogan "From farm to plate, make food safe". Food safety is the assurance that food

will not cause harm to the consumer when it is prepared and/or eaten according to its intended use. Millions of people fall ill and many of these suffer from serious disorders, long-term complications, or die as a result of eating unsafe food. [5]

In India, the problem of acute diarrheal diseases and food poisoning is widespread and account for over 40% of infectious disease outbreaks.[6] Food borne illness is a common, yet preventable public health problem. In India, most people still eat food that is cooked at home. There are a number of factors which are likely to contribute to outbreaks of food borne illness in the home, including a raw food supply that is frequently contaminated, a lack of awareness, mistakes in food handling and food preparation and the deliberate consumption of raw and undercooked foods of animal origin, often described as 'risky eating behaviour'.[7] In India, Women in households have primary responsibilities of ensuring food safety making it necessary to assess the food safety practices among them.

With this background the study was conducted to assess the knowledge, attitude and practices regarding food safety among women at household level and to assess the association of knowledge, practices and food borne illnesses in community.

MATERIALS AND METHODOLOGY

A cross-sectional community based study was done among women in the field practice area of urban health centre, JSS Medical College, Mysuru for a period of 3 months from November 2015 to January 2016.By using a nationwide study reporting food-borne diseases prevalence of 13.2% [5]at the household level, total sample size was calculated to be 180 and was rounded of to 203. After obtaining the informed consent, data was collected by House-to-house survey from the study participants who were randomly picked. Women who are the Primary food handlers at home and a house with members residing in the same place for at least six months or more were included in the study and the individuals who were not present at their house even after three visits were excluded from the study. After obtaining Institutional ethics committee clearance, data were collected using a pretested, semi-structured questionnaire by interview technique. Informed consent was taken prior to starting of the study and the purpose of the study was explained to the participants. Socio-demographic information was obtained (name, age, literacy status, occupation, religion, and socioeconomic status of the family, type of food consumption). History of food borne illnesses namely abdominal cramps, watery diarrhea 3 episodes or more per day, bloody diarrhea, dysentery, fever with nausea and vomiting following consumption of food, history of enteric fever in the family in past one year were obtained. History of food borne illnesses and knowledge, attitude, and practices regarding food safety was assessed using World Health Organization questionnaire of Five Keys to Safer Food, namely, (1)Keep clean; (2)Separate raw and cooked; (3)Cook thoroughly; (4)Keep food at safe temperatures; and (5)Use safe water and raw materials, was used to evaluate knowledge, attitude, and practices regarding food safety to handle and prepare food safely by practicing the WHO Five Keys to Safer Food at home.[8]WHO built the Five Keys to Safer Food to promote safe food handling behaviors and educate all food handler to adopt the basic principle to prevent food borne diseases. Data was entered in Epi data version 3.1 and analyzed by using SPSS version 22. Results were represented in form of proportions and Chi square test were used to find association between variables, Mann Whitney U test was applied for comparison of groups and statistically significance was defined at p-value less than 0.05.

RESULTS

Among 203 participants, 177(87.2%) had good attitude in keeping the kitchen surfaces clean which reduces the risk of illness, they clean the kitchen surface every time they finish their cooking and 163(80.8%) said frequent hand-washing during food preparation reduces the risk of contamination of food and maintains hygiene throughout the cooking process. Most of these women use soaps to wash their hands in their kitchen. Only 18(8.9%) had poor attitude to separate raw and cooked food as they felt it is not necessary to do so and 43(21.1%) thaw food in cool place and 72(35.4%) do not think that it is unsafe to leave cooked food out of the refrigerator for more than two hours.

Table 1: Distribution of study participants according to their socio-demographic profile

Socio demographic characteristics	Frequency (%)
Age in years	
Less than 30 years	90 (44.3)
More than 30 years	113 (55.6)
Occupation	
Home makers	138 (68)
Working	65 (32)
Education	
Literates	155(76.4)
Non Literates	48(23.6)
SES(Modified BG Prasad Classification)	
Class I (Upper)	--
Class II (Upper Middle)	8(3.9)
Class III(Lower Middle)	107(52.7)
Class IV (Upper Lower)	77(37.9)
Class V (Lower)	11(5.5)

Table 2: Distribution of participants according to their knowledge, attitude and practice towards Food Safety

Criteria	Good (%)	Poor (%)
Knowledge	183(90.1)	20(9.9)
Attitude	139(68.4)	64(31.6)
Practice	132(65.2)	71(34.8)

The reason for this is none availability of a refrigerator in most of their houses and also that they feel refrigeration is unsafe for their health (Table 2a)

Among 203 participants, 132(65.2%) participants had good food safety practices, who were further divided into those who practice most times and always.

Table 2a: Distribution of study subjects depending on their Attitude towards Food Safety

Keys for safer food	Attitude	
	Good (%)	Poor (%)
Frequent hand washing during cooking	163 (80.8)	40 (19.2)
Keeping kitchen surface clean < illness	177 (87.2)	26 (12.8)
Separate Raw & Cooked food	185 (91.1)	18 (8.9)
Thawing food in cool place is safer	160 (78.8)	43 (21.2)
Unsafe to leave cooked food out > 2hrs	131 (64.5)	72 (35.5)
Soups and stews should be always boiled to ensure safety	16 (7.8)	187 (92.2)
Using different knives & cutting boards for raw & cooked foods is worth extra effort	143 (70.5)	60 (29.5)
Meat thermometers are useful for ensuring food is cooked thoroughly	7 (3.7)	196 (96.3)
Inspecting food for freshness and wholesomeness is valuable	203 (100)	-
I think it is important to throw away foods that have reached their expiry date	202 (99.5)	1 (0.4)

Table 2b: Distribution of study subjects of Good practice for Food Safety

Questions for Practice for Food Safety	Practices	
	Always (%)	Most times (%)
I wash my hands before and during food preparation	99 (48.8)	92 (45.3)
I clean surfaces & equipment used for food preparation before re-using on other food	78 (38.4)	9 (54.2)
I use separate utensils and cutting boards when preparing raw and cooked food	7 (3.4)	10 (4.9)
I separate raw and cooked food during storage	194 (95.5)	9 (4.4)
I check that meats are cooked thoroughly	199 (98.0)	3 (1.5)
I reheat cooked food until it is piping hot throughout	12 (5.9)	3 (1.5)
I thaw frozen food in the refrigerator or other cool place	29 (14.2)	8 (3.9)
After I have cooked a meal I store any left-over's in a cool place < 2 hours	40 (19.7)	26 (12.8)
I check and throw away food beyond its expiry date	193 (95)	10 (4.9)
I wash fruits and vegetables with safe water before eating them	189 (93.1)	14 (6.9)
Average	51.2	14
Total (%) Good Practice	65.2	

Table 3: Distribution of study subjects based on association of Education, Occupation and Food borne Diseases

Variables	Food-Borne Disease in One Year		Total	P value
	Yes (%)	No (%)		
Education				
Literate	42(27.1)	113(72.9)	155	0.02
Non literate	21(43.8)	27(56.3)	48	
Occupation				
Working	29(44.6)	36(55.3)	65	0.01
Home makers	34(24.6)	104(75.3)	138	

Table 4: Distribution of study subjects based on association of KAP and Food borne Diseases

KAP	Food borne Diseases		Value#	P Value
	Present*	Absent*		
Knowledge	98.75	103.46	4205.5	0.580
Attitude	86.53	108.96	3435.5	0.006
Practice	91.06	106.92	3721.0	0.010

*Mean Rank; # Mann-Whitney U Test

Among them,12(5.9%) always reheated the cooked food as they felt reheating food and serving hot food is healthier and free from any bacterial growth and 40 (19.7%) of them always store leftover food in a cool place within two hours. Around 10(4.9%) of them most times used separate utensils and cutting boards while cutting raw food materials and preparing cooked food, 8(3.9%) women most times thaw frozen food in cool place and 14(6.9%) most times wash fruits and vegetables before the usage. (Table 2b)

Food borne illness was seen in 63(31%) of participants in past one year which included namely abdominal cramps, watery diarrhea 3 episodes or more per day, bloody diarrhea, dysentery, fever with nausea and vomiting following consumption of food, history of enteric fever in the family. Among 183 participants with good knowledge, Food borne illness was seen in 53(28.9%) and those with poor knowledge around 10 (50%) had food borne illness.

Among the study participants, around 113 (72.9%) literates and 104 (75.3%) homemakers had no food borne illness in last one year and this association between FBD and Educational status and occupation was statistically significant. (Table 3). Among the study participants, those without FBD in last one year had higher ranks in knowledge, Attitude and practice compared to those with FBD and there was a statistically significant difference in attitude and practice.(Table 4)

DISCUSSION

The present study was a community based cross sectional study for a period of three months by conducting house to house survey. Although 183 (90.1%) participants had good knowledge regarding food safety only 139(68.4%)had good attitude and 132(65.2%) had good practice regarding food safety showing a gap between knowledge, attitude and practice.

Similar results were seen in study done by Mendagudali et al regarding food safety using World Health Organization questionnaire among women of Khaza bazaar in Kalaburagi, Karnataka which showed participants had consistently good knowledge (58.3%), attitude (81.7%), and practice (79.0%).[12]Study done by SaradaVadlamani et al which used self designed questionnaire in Vishakhapatnam, Andrapradesh showed 94.7% had good knowledge regarding food safety, 30.7% had good practices showing gap between knowledge and practices.[14] Study done by Priyadarshini and Vijayeta in Bhuvneshwar using self-designed questionnaire showed lack food safety knowledge among homemakers and huge gap in knowledge and practice.[15]Study done by Ngozi Eze and Ngozi Anyaegbunam regarding household level food safety among university workers also revealed good knowledge but poor practice.[16]Study done by Masia Tirhani Asnath and Madonsela Phindile Connie only 53.9% had satisfactory knowledge in South African women preparing food at household levels.[17] Though various studies show good knowledge among household women regarding food safety but gap in knowledge to attitude and gap in knowledge to practice stresses the importance of health education at household levels to bring the behavioural change and promote healthy nutrition which forms one of the essential pillar for healthy living.

In the present study, 113 (72.9%) literates had no food borne illness in last one year (p value <0.05) showing that literates had lesser illness. Similar results were seen in Sudershan et al and Mendagudali et al which showed literacy had a major role to play in Food borne illness occurrence.[11,12]Women role in food safety and nutrition is directly influenced by her working and educational status. However Study done by Masia Tirhani Asnath and Madonsela Phindile Connie among women preparing food at households showed educational level had no influence on the level of food safety knowledge. [18]

Strengths and limitations of study:

The present study used Standardized and validated "WHO 5 keys for safer food tool" was used to assess the KAP among women. Limitations of study is the inherent recall bias could not be eliminated Comparison between various studies shows many findings close to the present observations but the evaluation tool are different for most of studies and generalization of the present result is not possible.

CONCLUSION

The role of women in the prevention of food borne diseases is very important and need intervention based upon the source of pathogens, the potential routes of transfer within the home and the risk posed by them to a family member are the major implications of the study. Safe food handling leads to healthy food and disease free life. Educating the homemakers is seen as a key factor in improving food safety practices at home and benefit the society to lead a healthy living but also to bringing behavioural change and promote healthy nutrition which in turn will have a significant impact on the society, to minimize food borne illnesses and outbreaks in the community.

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