

Original Article

Household food safety practices in a rural area of Kancheepuram District, Tamil Nadu- A cross-sectional study

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Abstract:

Introduction: Food safety is a public health priority. Though contamination of food could occur at any point from production to consumption, a substantial proportion of foodborne diseases occur due to inadequate food safety practices at home. This study was undertaken to assess food safety practices in rural households in the field practice area of our college and identify any association between food safety practices and occurrence of food-borne illness in the family. **Materials and methods:** This was a descriptive, cross-sectional study conducted among woman above thirty years of age attending the rural training and health centre of a medical college in Kancheepuram district between January to March 2016. A pre-tested schedule was used to obtain information of foodborne illness in the family in the past three months and food safety practices at home. The results were tabulated and appropriate statistical tests performed. **Results:** Among the 100 women participated, 28% reported that at least one person in their family has suffered from foodborne illness in the past three months. Significant statistical association was identified between occurrence of food-borne illness and absence of separate kitchen, inadequate hand washing practices, storing food for more than 1 day, reheating of stored food and housefly breeding in household ($p < 0.05$). **Conclusion:** This study highlighted inadequacies in food safety at household level and the association with foodborne illnesses and need for similar studies in different parts of the country. The information obtained will help us develop an effective health education programme appropriate to target population.

Key words: Food safety practices, food hygiene, food contamination, food-borne illness

Introduction:

Food safety is an issue of major public health relevance and has been recognised by the World Health Organisation (WHO) as the theme for World Health Day, 2015.¹ Unsafe food is associated with a wide range of health problems: diarrhoeal diseases, viral diseases,

reproductive and developmental problems and cancers.¹ The WHO initiative to estimate global burden of food-borne diseases identified 600 million food-borne illnesses caused by 31 classified food-borne hazards in 2010.² Foodborne and waterborne diarrhoeal

diseases kill an estimated 2,000,000 people worldwide every year. The most common nature of foodborne illness was diarrhoeal diseases.³ The World Health Day 2015 theme “Food safety: from farm to plate” directs the focus on the entire food chain from production to consumption. Though contamination of food could occur at any point from production to consumption, with food producers and distributors primarily responsible for food safety, a substantial proportion of foodborne diseases occur due to unsafe food handling practices at home and food service establishments.³ While supply-side issues are regulated by national guidelines and codes of practice, the consumer-side issues require understanding and addressing the cultural and behavioural factors that influence food handling practices.⁴

A nation-wide survey in India reported a 13% prevalence of food-borne illness in the previous fortnight.⁴ Estimates of foodborne illness from various studies report that a wide range of these episodes (9 to 95%) are attributed to food handling errors at home.⁵ But population-based attitude surveys reveal that only 8 to 12% of the general population believe that they could be at risk of developing foodborne illness from home prepared foods.⁵ There is a definite paucity of studies assessing household food safety practices in India. This study was undertaken to assess the food safety practices in rural households in the field practice area of our college and identify any association between food safety practices and occurrence of food-borne illness in the family.

Materials and methods:

This was a descriptive, cross-sectional study conducted between January and March 2016 in a rural area of Kancheepuram district in Tamil Nadu, India. All married women above 30 years attending the rural health and training centre of a medical college in Kancheepuram District during the study period were considered under study population. Women who were not actively involved in food preparation at home and those not willing to participate were excluded from the study. A pretested schedule in the local language was administered to the participants after obtaining informed consent. The schedule consisted of 3 parts: sociodemographic details, details on the occurrence of foodborne illness in any of the family member in the past 3 months and food handling practices. An episode of foodborne illness was defined as occurrence of one or

more of the following symptoms – diarrhoea, abdominal pain and vomiting with or without fever, diagnosed and treated by a physician as foodborne illness and strongly assumed to be related to intake of home-cooked food in the past 3 months. The responses were recorded in Microsoft Office Excel 2007 and statistical analysis was performed using WinPepi software, version 11.25. The socio-demographic variables and food safety characteristics were expressed in frequencies and percentage. Cross-tabulation was done to compare the occurrence of food-borne illness with food safety characteristics. Chi-square test was used to assess significance of association of categorical variables. Fisher’s exact P value of used if any of the cells contained value less than 5. A P-value of less than 0.05 was considered significant.

Results:

A total of 100 women participated in the study. Table 1 summarises the

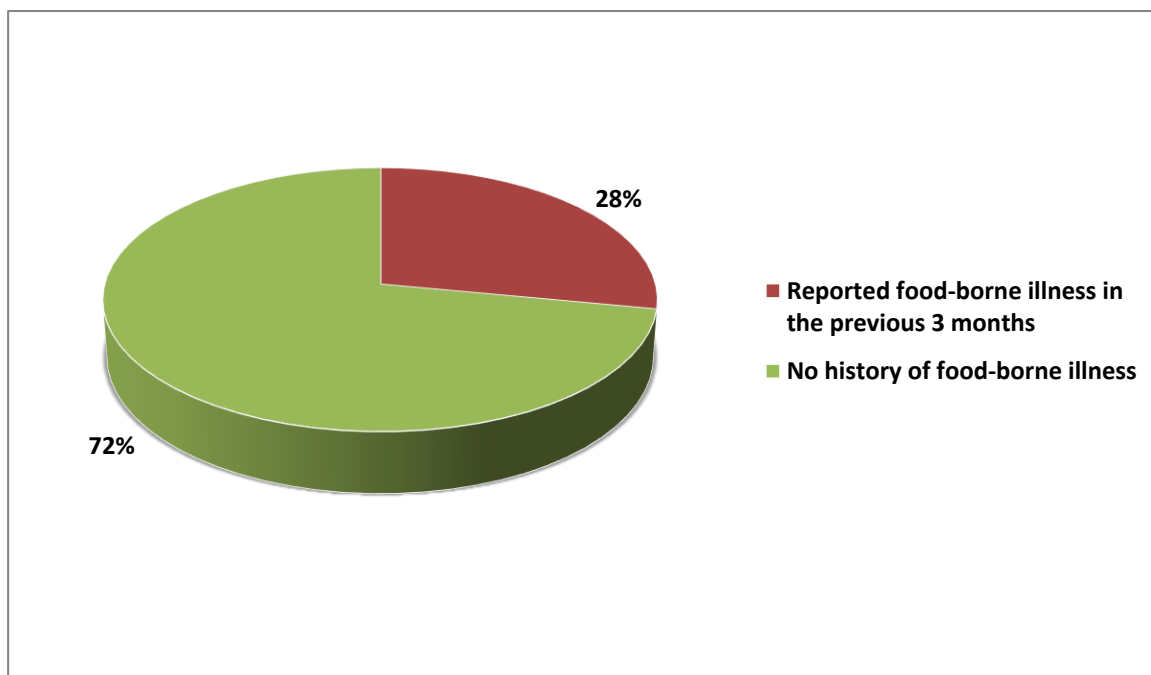
sociodemographic characteristics of the participants.

Table 1: Socio-demographic profile of participants

Variables	Frequency(Percentages)
Age group	
21 to 30 years	36 (36)
31 to 40 years	48 (48)
More than 40 years	16 (16)
Educational status	
Illiterate	5 (5)
Primary	20 (20)
Middle	48 (48)
High	15 (15)
Higher secondary	12 (12)
Occupational status	
Not employed	78 (78)
Labourer	22 (22)
Socioeconomic status*	
Middle	51 (51)
Lower	49 (49)
Type of family	
Joint family	37 (37)
Nuclear family	63 (63)

* based on Modified B G Prasad classification

Figure 1: Proportion of families with atleast one episode of food-borne illness in the previous 3 months



Twenty-eight percent of the participants reported that atleast one person in their family

has suffered from food-borne illness in the past three months.

Table 2: Distribution of food safety characteristics and food-borne illness

Variables	Frequency	Occurrence of food borne illness	P value
Type of kitchen			
Separate kitchen	86	14 (16.3)	< 0.01
No separate kitchen	14	14 (100)	
Source of drinking water			
Tap water (Panchayat source)	93	26 (27.9)	0.569
Well water	5	2 (40)	
Mineral water	2	0	
Use of boiled water for drinking			
Yes	35	9 (25.7)	0.709
No	65	19 (29.2)	
Frequency of purchase of vegetables			
Weekly	46	12 (26.1)	0.694
Daily	54	16 (29.6)	
Hand-washing before cooking			
Yes	73	12 (16.4)	< 0.01
No	27	16 (59.2)	
Washing vegetables before cooking			
Yes	87	27 (31)	0.156
No	13	1 (7.7)	
Cooking daily			
Yes	100		
Storing food for more than 1 day			
Yes	34	18 (52.9)	< 0.01
• Refrigeration	27		
• Native storage method	7		
No	66	10 (15.2)	
Reheating of food items			
Yes	33	17 (51.5)	< 0.01
No	67	11 (16.4)	
Hand-washing before eating by family members			
Yes	60	13 (21.7)	0.084
No	40	15 (37.5)	
Habit of taking outside food			
Yes	21	6 (28.6)	0.948
No	79	22 (27.8)	
House-fly breeding inside the kitchen			
Yes	15	12 (80)	< 0.01
No	85	16 (18.8)	

Among those who wash their hands before the cooking process, only 7% (5 out of 73) use soap for hand-washing. Only 8% of those who

wash vegetables before cooking use running water for washing, while the rest 92% use stored water for washing raw vegetables.

Discussion:

A total of 100 women participated in the study. This study provided insights into the common practices with regard to food handling and cooking among the study population. Fourteen percent of our study participants reported not having separate kitchen in their households. Only 35% of the households used boiled water for drinking. Twenty-seven percent reported not washing hands before cooking and 13% never washed vegetables before cooking. Thirty-three percent of the households reheated food items. The most important and commonest habit of washing hands before eating was not routinely practised in 40% of the households. Subba Rao et al. in their focus group studies among mothers in South India reported better food safety practices.⁶

Twenty-eight percent of the participants reported at least one episode of foodborne illness in their family during a period of three months prior to the study. Significant statistical association was identified between occurrence of food-borne illness and absence of separate kitchen, practices such as not washing hands before cooking, storage of food for more than 1 day, reheating of stored food and housefly breeding in the household ($p < 0.05$). There is a paucity of studies assessing the prevalence of foodborne illness and household food safety practices in India, which makes comparison with other populations difficult.

Alrabadi et al report more satisfactory hand washing and food storage practices than our study population.⁷ Improper food storage practices and poor personal hygiene have been

reported to have contributed to majority of food-borne diseases in United States between the years 1983 and 1992.⁸

Our study has a few limitations. The sample size was limited. The information on foodborne illness and food safety practices was self-reported, hence there could be a possibility of responder bias. The study was restricted to the household food safety practices. The knowledge and attitude of the participants related to food safety practices and consumer's purchasing behaviour which is another important factor in causation of food-borne illnesses was not explored. Microbial analysis of the raw and cooked food would have assisted in revealing any association between unsafe food handling practices and microbial growth.

Though this descriptive data appears preliminary, it nonetheless gives a brief overview of the state of food safety practices in rural India and highlights the need for similar studies in different parts of the country. Health education materials and campaigns on food-borne illnesses have mainly focussed on food safety in restaurants and choosing safe and hygienic eateries and foods. Home-made foods are often assumed to be safe. The information obtained from this study would help in understanding the food safety practices among the study population and develop an effective health education programme appropriate to the target population. A future broader study including assessment of detailed purchasing practices with regard to safer foods with microbiological analysis has been planned.

Conclusion:

This study highlights inadequacies in food safety at household level and the association with food-borne illnesses especially in rural areas. Hence it is imperative that we adopt a comprehensive approach to food safety including the essential link in farm-to-plate chain, safe food preparation and consumption

practices at household level. It is also important that the information given to the people is backed by credible scientific rationale and they are empowered with the means and resources to adopt food safety practices.

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