

Original Research Article

Domestic food hygiene practices among households in Pulipakkam Village, Kanchipuram District: a cross-sectional study

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ABSTRACT

Background: Food hygiene implies measures necessary to ensure safety of food from production to consumption. Food can become contaminated at any point during harvesting, processing, storage, distribution, transportation and preparation. Lack of proper food hygiene can lead to food borne diseases and death of the consumers. The purpose of food hygiene is to prepare and provide safe food and consequently contribute to a healthy and protective society.

Methods: A community based cross-sectional study was conducted from September 2019 to February 2020 among 81 household food-handlers in a rural area of Kanchipuram district. A pre-tested semi-structured questionnaire based on WHO (World Health Organization) Food Safety Manual was used to collect the data regarding kitchen and food hygiene practices.

Results: The study revealed that 74% of respondents handle drinking water unsatisfactorily. 89% of people don't store cooked food in the refrigerator within 2 hours and nearly 54% of them don't boil water before drinking. Only 48% of them separated raw food from cooked food.

Conclusions: The results of the study showed that food hygiene practices should be improved in the community to safe guard them against food-borne diseases.

Keywords: Food safety, Food hygiene, Food handling

INTRODUCTION

Unsafe food hygiene has been an important health problem since ages and many food safety problems encountered today are preventable. Although Governments from all over the world are doing their best to improve food safety, occurrence of food borne diseases remains a significant health issue in both developed and developing countries.

An estimated 2.5 million people die due to diarrhea each year, and the majorities are children aged less than five years in developing countries. Most of these cases can be attributed to food or water.¹ More than 200 known diseases are transmitted through food. The five keys of

Food safety as recommended by World Health Organization (WHO) are as follows; Prevent contaminating food with pathogens spreading from people, pets and pests, Separate raw and cooked foods to prevent contamination on cooked foods, Cook foods for appropriate time and temperature to kill pathogens, Store foods at proper temperature, use safe water and raw material.²

To Recognizing the importance of safe food in human health, WHO has selected the theme of Food Safety for the World Health Day, 2015, with the objective of ensuring safety of food from farm to plate. The chances of food and cross contamination become higher especially in lower socio-economic status due to unsatisfactory

environment conditions, poor personal hygiene, poor quality and insufficient water. Contaminated food became the potential source of gastrointestinal problems like acute diarrhoea, nausea, vomiting and abdominal pain which will lead to compromised nutritional status, low immunity and loss of productivity in life.

Epidemiological data on food borne disease outbreak in this community is not available but poor storage practices couples with poor personal hygiene and lack of knowledge in food safety practices are causes of concern in rural communities.³

This study was planned at assessing the food safety practices and domestic hygiene among the households in a rural community, Kanchipuram, Tamilnadu and also giving proper orientation and sensitization according to WHO standard to promote food safety practices.

METHODS

A community-based study will be conducted in Pulipakkam village, rural field practice area of Karpaga Vinayaga Institute of Medical Sciences and Research centre, Maduranthagam, Kanchipuram District, Tamil Nadu during the period of September 2019 to February 2020.

Sample size was calculated by using the formula $n=4pq/d^2$ Where, p is the proportion of women who practised hand washing before cooking in Mani G et al study which was 75.5%, and d was assumed as an absolute error of 10%.⁴

The sample size estimated was 74 and assuming a non-response of 10%, the final sample size calculated was 81. From the 24 wards in a panchayat one ward was selected randomly by lottery method.

From the selected ward, 81 households were selected by systematic random sampling. From each of the selected households, the person predominantly involved in food handling was selected for the study.

A semi-structured questionnaire was used to collect data regarding socio-demographic characteristics, general sanitation practices and food hygiene practices, storage of food and kitchen waste management based on the WHO Food Safety Manual.²

Data was collected at each households by interviewing the subjects with the help of pre tested, semi structured questionnaire. Ethical clearance was taken from the institutional ethical committee, KIMS and RC, Kanchipuram for conduction of this study.

Before data collection, informed consent was obtained from the participants. The questionnaire was administered

to women of the households who were willing to participate in the study. If the female head was not available, an adult male who participated in cooking was included.

Before data collection, informed consent was obtained from the participants. Data entry was done in Microsoft Excel and Data were analyzed using Epi Info software (7.1.0.6). Collected data was checked for consistency. Simple proportions calculated and χ^2 test was applied to check statistical significance.

RESULTS

A total of 81 houses were visited to assess the domestic food hygiene practices among households in Pulipakkam village. Table 1 shows the socio demographic characteristics of the responders. 93% were females between the age group of 26-45 years.

Table 1: Distribution based on socio-demographic characteristics of respondents (n=81).

Variable	Frequency	Percentage (%)	
Gender	Male	6	7.4
	Female	75	92.5
Age in years	<25	9	11.1
	26-35	22	27.2
	36-45	21	25.9
	46-55	14	17.3
	>55	15	18.5
Education al status	Illiterate	18	22.2
	Primary school	5	6.2
	Middle school	8	9.8
	Higher secondary school	34	41.9
	Diploma/ degree	16	19.7
	Socio-Economic Status	Class I	7
Class II		6	7.4
Class III		11	13.5
Class IV		48	59.2
Class V		9	11

Table 2: Distribution of personal hygiene characteristics of respondents (n=81).

Variables	Frequency	Percentage	
Tying hair before cooking	Yes	74	91.3
	No	7	8.6
Trimming nails	Yes	58	71.6
	No	23	28.4

Table 3: Safer food practices among household respondents (n=81).

Practice		Frequency	Percentage
Place of food preparation	Indoors	2	8.8
	Outdoors	4	0.9
	Both	5	0.2
	Never	1	1.2
	Rarely	4	4.9
Frequency of cleaning cooking environment	Often	17	20.9
	Always	59	72.8
	Bush	19	23.4
	Roadside	6	7.4
Method of refuse disposal	Burning	8	9.8
	General refuse dump	46	56.8
	Others	2	2.5
Government involvement in environmental sanitation	Yes	55	67.9
	No	26	32.1
Handwashing after toilet use	Yes	78	96.3
	No	3	3.7
Cleaning of cooking utensils before and after use	Never	1	1.2
	Rarely	1	1.2
	Often	23	28.4
	Always	56	69.1
Separation of raw and cooked foods	Yes	63	77.7
	No	18	22.2
	Never	1	1.2
Thorough boiling of food before consumption	Rarely	2	2.5
	Often	5	6.2
	Always	73	90.1
	Never	34	41.9
	Rarely	3	3.7
Reheat of previously cooked food	Often	26	32.1
	Always	18	22.2
	Sun drying	5	6.2
	Smoking	3	3.7
Food storage/ preservation	Refrigeration	71	87.6
	Not applicable	2	2.5
Use of pesticide on/near food items	Yes	19	23.5
	No	62	76.5
	Not applicable	1	1.2
	Never	6	7.4
	Rarely	11	13.6
	Often	15	18.5
Water boiling/ purification	Always	48	59.2
	Never	-	-
	Rarely	1	1.2
Wash food thoroughly before consumption	Often	5	6.2
	Always	75	92.5
	Not applicable	2	2.5
	Never	8	9.8
Check expiry date	Rarely	5	6.2
	Often	12	14.8
	Always	54	66.6

Almost 42% of responders studied up to higher secondary school. Nearly 60% of responders were belonging to class IV socio-economic class according to modified BG Prasad classification. Table 2 shows the distribution of personal hygiene characteristics. 91% of the responders said they tie their hair before cooking which is one of the good practices.

Five key for safer food

Keep clean

The first and foremost thing in food safety is keep it clean, the person who cooks, the utensil from which it get cooked and the environment where we cook. 88% of responders practices indoor cooking, 72% of the responders always clean the cooking environment. 69% responded that they wash the utensil thoroughly before and after cooking. Nearly all reported (96%) of the responders washing their hands after using toilet.

Separate raw and cooked food

Nearly two third (77%) of responders store the raw and cooked food separately.

Cook thoroughly

Bringing the temperature of foods to 70°C while cooking has been shown to make foods safer for consumption. The result showed that 90% always cook their food thoroughly before eating, 22.2% always heat previously cooked food before eating while 41.9% do not eat leftovers the following day.

Keep food at safe temperature

Storage practices vary across geographical areas. Most commonly used storage practice here is refrigeration (87.6%) followed by sun drying (6.2%).

Use safe water and raw material: nearly 60% of the responders mentioned the boil the water before consumption

The use of pesticides on food items was also assessed since almost 59% reported pest attacks on their food. Nearly one-quarter (23.5%) of the respondents reported the use of pesticides on/near food items. About 92.5% always wash their foods/fruits before consumption and 66.6% always check the expiry date before purchase, 9.8% of people responded that they never check expiry date before using the food item.

DISCUSSION

Food safety is an important public health issue in both developing and developed countries, thus WHO has developed five main keys to safer food, which include keeping clean, separating raw and cooked food, cooking

thoroughly, keeping food at safe temperatures, and using safe water and raw materials.⁵

This study showed food safety practices among household respondents in Pulipakkam village. It was observed that 78% of the respondents had formal education while 22.2% had no formal education. This could have influenced the 71.4% of the respondents that do a check on the food expiry date before purchase and consumption. A significant association was found between educational level and washing of hands after toilet use ($p < 0.05$).

All respondents with high school education or more have reported washing their hands after toilet use compared to those of no formal education. This study also found that 66% of the respondents always wash their hands before cooking. Several studies reported that 87% to 92% of the respondents indicated that food handlers usually washed their hands before handling food, and 62% to 100% usually washed their hands after handling raw meat or poultry.⁶⁻⁸ Effective hand-washing therefore has been an effective and essential control measure for prevention of enteric pathogens like *E. coli*, *Salmonella typhi*, *Staphylococcus aureus* found on the food handlers.⁹

Majority of the food handlers responded that they cook with clean utensils and always clean their cooking environment, also tie their hair before entering the kitchen. Similar results were found in a study done in Malaysia where 90% of their respondents had clean their working areas and wash their hands before working.¹⁰ It was observed that 60% of responders always boil the water before consumption.

Only negligible percentage of people doesn't boil the water before consumption. This is a healthy practice which should be motivated by frequent health education campaign. Food safety practices such as the use of pesticides on/near food items showed 23.5% of household respondents engage in such act, as indicated on table 3b, which is also a major cause of food contamination globally.

Nearly half of the responders' practices general refuse dumps (56.8%) have their method of waste disposal. These refuse dumps acts as a rich source of mosquito breeding places and other microorganisms which are mostly pathogenic and capable of transmitting disease such as diarrhoea, typhoid and cholera.^{11,12} About 5% of responders practices outdoor cooking while 88.8% prepare their food indoors.

CONCLUSION

The question of food safety and food security remains essential to global health. Thus, strengthening food safety measures will help minimize the burden of food-borne diseases, reduce poverty and contribute to the achievement of the sustainable development goals.

Government should help in the management of refuse disposal and provision of potable water for the community.

Comprehensive public awareness efforts should be made on the food safety and prevention of food-borne diseases. This study suggests that the residents of this community show a satisfactory level of food safety practice. However, further studies need to be conducted in assessing the burden of food-borne diseases in this community and also the common microorganisms, as well as chemicals involved. Thus, it is important that the people continue to be educated on good hygienic practices and health behaviours with respect to food safety.

Limitation

This study employed a cross sectional study design and as such causal relationships between variables cannot be established. All the analyses are done based on self-report, with the possibility of under and over reporting.

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