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Food Safety Knowledge and Practices among Primary Food Preparers of under-5 children in an Urbanized Village of Delhi

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Abstract: ***Introduction****: Food safety aims at ensuring that all food is as safe as possible. Children under 5 years of age carry 40% of the foodborne disease burden, with 125 000 deaths every year.* ***Aim and objectives****: To assess the knowledge and practices regarding food safety in primary food preparers of under-5 children residing in Aliganj, field practice area of Vardhmann Mahavir Medical College and Safdarjung Hospital.* ***Materials and methods****: A community based cross sectional study was conducted amongPrimary food preparers for children under 5 years of age residing in Aliganj. Total of 110 food preparers were interviewd using a pre tested semi-structured questionnaire was used for data collection.* ***Results****: All the primary food preparers in the study were housewives, majority 54.5% belonged to 20-25 years, 87.3% women were literate, 95 (86.3%) were homemaker and 71 (64.5%) belonged lower middle class. Majority of women had correct knowledge and practice regarding separation of raw and cooked food, storing food in covered containers in fridge (57%), 33% had correct knowledge of storing food within 2 hrs. Most of women had correct knowledge regarding reheating of stored food before heating 83 (75.5%) and practice 65 (73.5%) but 13 (17.8%) practiced reheating food to correct temperature.* ***Conclusion****:There was found to be good practice and knowledge of separating raw and cooked food while a poor practice regarding storage, temperature of reheating stored food, reuse and reheating of cooking oil.*

Keywords: food safety

1. Introduction

Food borne illnesses not only contribute to increased morbidity and mortality, they also affect socio-economic development.[1] They consist of illnesses arising due to bacteria, viruses, protozoa, helminths, prions as well as diseases due to added chemicals and pesticides. They can cause diarrhoea and also lead to various other consequences such asrenal failure, liver failure, neurological disorders, arthritis etc. Chemicals, whether in the form of pesticides or as additives in food, can lead to non communicable diseases such as cancer, diseases affecting reproductive system as well as those affecting our immune system.[2]

WHO estimates about 32 disease conditions arising due to the various food borne hazards. Among these, diarrhoeal diseases, particularly due to Norovirus and Campylobacter, are the most common.Food safety aims at ensuring that all food is as safe as possible. An estimated 600 million – almost 1 in 10 people in the world – fall ill after eating contaminated food and 420 000 die every year, resulting in the loss of 33 million healthy life years (DALYs). Children under 5 years of age carry 40% of the food borne disease burden, with 125000 deaths every year.A very large proportion of food borne diseases occur due to improper handling of food at household/ commercial level.[3]While people of all ages are susceptible to unsafe food, the effect is much more in children who tend to be affected by the vicious cycle of diarrhoea and malnutrition. Keeping the above in mind, the study aimed to assess the knowledge and practices regarding food safety in primary food preparers of under-5 children, in accordance with 'Five Keys to Safer Food' as formulated by WHO.

2. Materials and Methods

A community based cross sectional study was conducted among Primary food preparers for children under 5 years of age residing in Aliganj, field practice area of department of Community Medicine Vardhmann Mahavir Medical College and Safdarjung Hospital, Delhi. Data collection was done during August – September 2015. Since no study among primary food prepares of under five children was found, the 'sample size' was calculated using 'proportion formula for prevalence'; taking prevalence of 50% and absolute error as10%. The sample size came out to be100, to which a 10% non- response rate was added making a total sample size of 110. Aliganj has a total population of 6228 people, living in 1668 households (Baseline survey 2014 carried out by the Department) and 600 under five children. A child:household ratio of 3:1 was used, resulting in households visited for 110 children to be 330. Hence, every 5th house was visited, if the house was found locked or any child younger than 5 years old was not present in the household, the next house was visited. A pre-tested, semi-structured questionnaire was used for data collection. The primary food preparer was defined as the family member who prepares most of the meals of the family. Thedata collected was entered in MS excel and analyzed for mean, frequency and proportion.

3. Results

All the primary food preparers in the study were women in the age group 19-32 years. Majority of them (54.5%) belonged to the age group of 20-25 years. Out of the total women interviewed, 96 (87.3%) were literate, 95 (86.3%) were homemaker and 71 (64.5%) belonged lower middle class. (Table 1).

Table 1: Demographic profile of the study participants

Sociodemographic characteristics	*Number*	*%*
Age(years)		
<20	1	9
20-25	60	54.5
25-30	38	34.5
≥30	11	10

Educational Status		
Illiterate	14	12.7
Literate	96	87.3
Occupation		
Homemaker	95	86.3
Housemaid	8	7.3
Others	7	6.3
Socio-economic status*		
Upper middle	38	28.2
Lower middle	71	64.5
Lower	8	7.3
Total	**110**	**100**

*According to revised, Kuppuswamy scale (2014)

Half of the women interviewed, had correct knowledge and practice regarding separation of raw and cooked food (50.9%). Most women (~57%) knew that food should be stored in covered containers in refrigerator.Thirty three percent had correct knowledge of storing food within 2 hrs. As far as 'reheating stored food before consumption' is concerned, 83 (75.5%) had the adequate knowledge but only 65 (73.5%) actually practised it with only 13 women (17.8%) who practiced reheating food to correct temperature. Among 44 women who cooked non-vegetarian food, only 6 (13.6%) knew correct cooking point of chicken. The women also had incorrect knowledge and practise of 'reusing cooking oil' with as many as 63 women (57.3%) believing that cooking oil can be reused and 48 (43.6%) always reusing it (Table 2).

Table 2: Distribution of study subjects according to Knowledge and practices assessed regarding food safety as per WHO five keys

Knowledge, attitude and practices assessed regarding food safety	*Number*	*%*
A1) Knowledge does raw food needs to be stored separately from cooked food		
Yes	56	50.9
No	54	49.1
A2) Fruits and vegetables separated from cooked food*		
Always	75	68.2
Never	23	20.9
Sometimes	12	10.9
B1) Method of Storage of leftover food (N=40)*		
-Open containers in fridge	1	2.5
-Closed containers in fridge	23	57.5
-Closed containers outside fridge	16	40
B2) Food to be stored, can be refrigerated within what time (N=24)		
Immediately	10	41.7
Within 2 hours	8	33.3
After 2 hours	6	25
C) Reheating of stored cooked food		
C1) Knowledge whether food should be reheated before consumption (n=110)		
Yes should be reheated	83	75.5
Should not be reheated	27	24.5
C2) Practice about reheating food before consumption (n=83)		
Always	61	73.5
Never	10	12
Sometimes	12	14.4
C3) Practice regarding temperature to which food reheated before consumption (n=73)#		
Room temperature	3	4.1
Warm enough to eat	57	78.1
Till steaming hot	13	17.8
D) Knowledge about cooking temperatures of non-veg food (N=44)^		
D1) Cooking of chicken (n=44)		
Flesh is red	18	40.9
Flesh is white	6	13.6
Steaming if cut	8	18.2
Others	6	13.6
Don't know	6	13.6
E)Reuse of cooking oil		
E1) Knowledge regarding reuse of cooking oil (N=110)		
Can be reused	63	57.3
Should not be reused	38	34.5
Don't know	9	8.2
E2) Practice regarding reuse of cooking oil(N=110)		
Always reuse	48	43.6
Never reuse	34	30.9
Sometimes	28	25.5

*only 40 out of 110 households used to have left over food, ^ 44 individuals cooked non vegetarian food and #73 are reheating out of 110

Majority of food handlers 72 (65.5%) always used same type of water for cooking and drinking, 55 (50%) drew water from glass without handle, majority 58 (52.7%) consumed water without purification. Majority 92 (82.7%) practiced washing vegetables in still water (Table 3).

Table 3: Other Practices regarding cooking/storage of food exercised by the respondents

Other Practices	*Number*	*%*
1. Usage of same type of water for cooking and drinking		
Always	72	65.5
Never	36	32.7
Sometimes	2	1.8
2. Distribution of study participants according to method of extraction of drinking water(n=110)		
Tap	22	22
Glass without handle	55	50
Mug with handle	23	30
3. Purification of water (n=110)		
Consume after purification	52	47.3
Consume without purification	58	52.7
4.Method used forPurification of water (n=52)		
Boiling	5	9.6
Aqua guard	30	57.7
RO	5	9.6
Candle filter	12	23.1
5. Practice of washing fruits and vegetables after buying		
Wash with still water	91	82.7
Wash with running water	14	12.7
Don't wash	5	4.6

Majority of women cleaned hands 101 (91.8%), keep nails trimmed 95 (86.4%), tying and covering hair 96 (97.3%), hand washing with soap 98 (89.1%) before food preparation (Table 4).

Table 4: Hygiene practices while cooking food (n=110)

Hygiene practices while cooking food (n=110)	*Number*	*%*
1. Cleaning hands before preparing food (n=110)		
Yes	101	91.8
No	9	8.2
2. Keeping nails trimmed and clean while preparing food(n=110)		
Yes	95	86.4
No	15	13.6
3. Tying and covering hair while preparing food (n=110)		
Yes	96	87.3
No	14	12.7
4. Removing ring and jewelry while preparing food (n=110)		
Yes	55	50
No	55	50
5. Hand washing practices before food preparation (n=110)		
Yes	106	96.4
No	4	3.6
6. Practice of hand washing		
Wash with soap	98	89.1
With water	11	10
7. Washing after using toilet		
Yes	108	98.2
No	2	1.8

4. Discussion

Majority of the study participants had both the knowledge and followed the practice of separating raw food from cooked food. All the participants who stored left over food had knowledge about reheating food before consumption and also followed it as a practice. However, they were not aware about the temperature up to which the food should be reheated and also the reason behind it. In their study conducted among women, Sarada Vadlaman et al[2] had also found a gap between correct knowledge (94.7%) and good practice (30.7%). In their study, 32% women always separated raw and cooked food despite 94.7% having the knowledge of the same. However, in our study,even though only 50.9% women knew that food should be separated, as many as 68.2% practiced separation of food as a habit.A gap was also found in the number of participants having the knowledge regarding reheating stored food versus those actually practicing it. While 83 (75.5%) women had the knowledge, 65 (73.5%) actually reheated stored food. The study also revealed that some participants (17.8%) were not aware of correct temperature to which food should be reheated. Percentage of participants always reheating stored, cooked food were only 16% in the study conducted by Sarada Vadlaman et al.[4] In the present study majority of the mothers of under five children practiced washing fruits and vegetables after buying (95.4%), similar findings were observed by Sudershan RV et al. that mothers of under five children practiced washing vegetables (86.8%) and fruits (75.7%) before consumption[5] while Sarada Vadlaman et al found 48.7% always washed fruits and vegetables before eating.[4] In our study 90% of the study participants use water and soap to wash their hands before food preparation. While Sudershan RV et al. observed that majority of mothers washed their hands before feeding the child (86%) but more than 75% washed hands only with water.[5] They observed that even after using toilet, only 50% used soap[3] while in our study 89.1% participants washed hands with soap. Sheethal M P et al. in their study conducted among Aanganwadi workers, found all of them had practice of hand washing before cutting vegetables, handling food and after defecation.[6] However, Sarada Vadlaman et al. observed 97.3% had knowledge regarding importance of hand washing during handling of food but only 45.3% of them practiced it.[4]

5. Conclusion

The participants exhibited a few good attributes and a few bad ones. Good knowledge and practice was found pertaining to separation of raw and cooked food but poor knowledge and practices were seen in the areas of storage and reheating of cooked food, especially regarding the temperature to which food should be reheated. Poor knowledge and practice regarding reuse of cooking oil was also observed in the study participants.

6. Limitations and Strength

There is a possibility of recall bias. The study can be used for conducting health talks and health education program and to assess KAP before and after application of such programs of risk communication. Discussing food safety with primary food preparers also make them conscious of their practices and also highlights the implications of basic hygiene of food preparer on the health of the entire family.

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