

## Original Research Article

**Knowledge, Attitude and Practice of food safety among the residents of an urban slum- A cross-sectional study****Epari Ravi Kiran<sup>1\*</sup>, Karri Vijaya<sup>2</sup>, M.Satyanarayana.Raju<sup>3</sup>, N. Hanumanth<sup>4</sup>, Pydi Keertika<sup>5</sup>**<sup>1</sup>*Professor of Community Medicine, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, Viskhapatnam, Andhra Pradesh, India*<sup>2</sup>*Professor & HOD of Community Medicine, NRI Institute of Medical Sciences, Sangivalasa, Viskhapatnam, Andhra Pradesh, India*<sup>3</sup>*Associate Professor of Community Medicine, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, Viskhapatnam, Andhra Pradesh, India*<sup>4</sup>*Lecturer in Statistics, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, Viskhapatnam, Andhra Pradesh, India*<sup>5</sup>*Associate Investigator, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, Viskhapatnam, Andhra Pradesh, India***Received: 27-11-2021 / Revised: 26-12-2021 / Accepted: 08-01-2022****Abstract**

**Introduction:** Food safety refers to limiting the presence of those hazards whether chronic or acute, that may make food injurious to the health of the consumer. Ensuring food safety is the responsibility of everyone involved with handling and preparation of food. **Objective:** To assess the knowledge, attitude and practices of food safety among the women inmates of the households located in an urban slum. **Methodology:** A cross-sectional study was conducted among the women involved in food preparation in YSR colony, an urban slum located adjacent to a private medical college in Visakhapatnam with a sample size of 121. The data was collected by interviewing the study subject using a pre-designed, pretested questionnaire. **Results:** Only 35.5% of the women were having good knowledge of food safety. 54.5% of them were having favourable attitude towards food safety and 57% of them were having good practice of food safety. The Spearman's rank correlation test showed positive correlation between scores of knowledge and scores of attitude of the women of food safety ( $r=.241$ ;  $p=0.008$ ) and between scores of attitude and scores of practice of the women participants and their correlation was found to be statistically significant ( $r=.826$ ;  $p<0.001$ ). **Conclusion:** Most of the women residents' knowledge, attitude and practices towards 'WHO Five keys for Food safety' is abysmally low and the gaps have to be plugged for promoting nutrition and ensuring a healthy society.

**Keywords:** Food safety, knowledge, attitude, practice

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**Introduction**

Food safety refers to limiting the presence of those hazards whether chronic or acute, that may make food injurious to the health of the consumer. Ensuring food safety requires due attention during harvest, transport, processing, storage and finally during food preparation and storage by consumers. Food safety is everybody's concern and it is difficult to find anyone who has not encountered an unpleasant moment of foodborne illness at least once in the past year[1].

In a report on Food safety by the World Health Organization (WHO), an estimated 600 million – almost 1 in 10 people in the world fall ill after eating contaminated food and 4,20,000 die every year, resulting in the loss of 33 million healthy life years (DALYS)[2].

In India, majority outbreaks of foodborne disease go unrecognised or un-investigated and may be noticed only after any major health or economic damage has occurred[3].

It has been observed, that at households women generally handle the kitchens and do the cooking.

Taking the above facts into consideration a study was undertaken to assess the knowledge, attitude and practices about food safety among

the women inmates of the households in an urban slum of Visakhapatnam.

**Aim and Objective**

To assess the knowledge, attitude and practices (KAP) of food safety among the women inmates of the households in an urban slum.

**Materials and Methods****Study design**

A cross-sectional study was conducted among the women involved in food preparation.

**Study setting**

YSR colony, an urban slum in an area located adjacent to Gayatri Vidya Parishad Institute of Health Care and Medical Technology, a private medical college in Visakhapatnam. This colony had 1984 flats housed in 62 blocks or residential complexes.

**Study duration**

2 months from 1<sup>st</sup> August 2021- 30<sup>th</sup> September 2021.

**Study population**

Women of the selected households involved in food preparation.

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**Sample size**

As the study was carried out in a population, the following formula was used for calculation of sample for the present KAP study :  $n \geq N / 1 + Nd^2$  where N= population size ; d = estimated / allowable error .The sample size 'n' got was  $\geq 95.2$  which rounded to 96. Adding a non-response rate of 25% (taking into consideration that most of the women folk of the urban slum go outside for work), the sample size calculated was 120 which was finally fixed to 121.

**Inclusion criteria**

Healthy woman aged 18 years and above, who belonged to the household, who was a permanent resident and who was involved in preparation of food.

**Exclusion criteria**

Was a woman below 18 years, who was sick, who did not belong to the house, who was not a permanent resident, who was not involved in food preparation and the household which was found to be locked for 3 consecutive visits by the investigator.

**Study procedure and Data collection**

Simple Random Sampling technique was used to select the households as per the sample size. The data was collected by interviewing the study subject using a pre-designed, pretested questionnaire after explaining the study and assuring strict confidentiality to the women of the selected households involved in food preparation. Socio-demographic details, cooking methods and history of food poisoning in the past 6 months before the study period in any of the family members of the household was collected. Knowledge, attitude and practices of study subjects concerning food safety and also their personal hygiene during food preparation was assessed by the help of the questionnaire. The questionnaire was based on 5 keys for safer food viz., Key 1 – Keep Clean, Key 2- Separate raw and cooked, Key 3- Cook thoroughly, Key 4 -Keep food at safe temperatures and Key 5- Use safe water and raw materials. For the questions regarding knowledge, options given were 'True' and 'False'. The mean and SD of the total score of the responses concerning knowledge of food safety of the women inmates was taken. Those having a total score more than mean were considered to be having 'good knowledge'. Regarding attitude options given were 'Agree', 'Not sure' and 'Disagree'. The mean and SD of the total score of the responses of the women inmates concerning attitude of

food safety was taken. Those having a total score more than mean were considered to be having 'favourable attitude'. Regarding food safety practices options given were, 'Always', 'Most times', 'Sometimes', 'Not often' and 'Never'. The mean and SD of the total score of the responses of the women inmates concerning practice of food safety was taken. Those participants whose total score of the responses was more than mean were considered to be having 'good practice'.

**Data entry and analysis**

The data collected was entered into MS Excel spreadsheets and will be analysed using SPSS version 22. (Statistical Package for Social Sciences).[4] Descriptive statistics like percentages, mean with standard deviation was calculated. Inferential statistics like Chi-square test for associations, Spearman's rank correlation coefficient for degree of correlation between two variables were done and  $p < 0.05$  was considered as statistically significant.

**Ethical approval**

Approval from Institutional Ethics Committee (RC. No. GVPIHCMT/IEC/20210617/16 ) was obtained prior to the start of the study.

**Consent**

Informed consent was obtained from the study participants before the commencement of the study.

**Results**

Majority (38.0%) of the women participants belonged to 25-35 years. Mean age was  $35.96 \pm 9.10$  years with a minimum of 21 years and a maximum of 56 years. Most (92.6%) of them were Hindus. Most (63.6%) of them hailed from OBC community. Homemakers formed the maximum (67.8%) of the study population. The literate women in the study constituted 81% among whom the maximum (33.1%) were educated up to secondary level. Most (92.6%) of them were married and 7.4% of them were widows. 90.9% of the women were from nuclear families. More than 3 members were there in the families of the majority (55.4%) of the research participants. According to modified B.G.Prasad's classification of socio-economic status a large proportion (46.3%) of the study population were categorised in Class III (Middle Class). [ vide Table 1]

**Table-1: Distribution of study participants as per socio-demographic variables (n=121 )**

Variable	Category	Frequency	Percentage
Age group in years	18-25	19	15.7
	25-35	46	38
	35-45	34	28.1
	45-55	21	17.4
	>55	1	0.8
Religion	Hindu	112	92.6
	Muslim	1	0.8
	Christian	8	6.6
Community	SC	26	21.5
	ST	1	0.8
	OBC	77	63.6
	OC	17	14
Occupation	Business	9	7.4
	Domestic help	8	6.6
	Employer	15	12.4
	Homemaker	82	67.8
	Labourer	5	4.1
	Tailoring	1	0.8
	Teacher	1	0.8
Education	Illiterate	23	19
	Primary	39	32.2
	Secondary	40	33.1
	PUC/Diploma	8	6.6

	Graduate	11	9.1
Marital status	Married	112	92.6
	Widow	9	7.4
	Nuclear	110	90.9
Type of family	Joint	1	0.8
	Three generation	9	7.4
	Broken	1	0.8
No. of family members	≤ 3	54	44.6
	>3	67	55.4
SES as per modified B.G.Prasad's classification	Class I (Upper Class)	5	4.1
	Class II (Upper Middle Class)	40	33.1
	Class III (Middle Class)	56	46.3
	Class IV (Lower Middle Class)	17	14
	Class V (Lower Class)	3	2.5

All (100%) the study subjects were using LPG gas as fuel for cooking. 66.1 % of the women said that they had smoke vent in the kitchen. Most (56.2%) of the women were having semi-vegetarian diet. Piped water was the source of drinking water in majority (97.5%) of the households. 77.7% of the study subjects had a refrigerator at their homes. About 5.8% of the research participants had said they had a history of food poisoning in their households in the last 6 months. [vide Table 2]

**Table – 2: Distribution of study participants as per other variables.(n=121)**

Variable	Category	Frequency	Percentage
Cooking fuel	LPG	121	100
Smoke vent in kitchen	Present	80	66.1
	Absent	41	33.9
Diet	Strict vegetarian	1	0.8
	Lacto - ovo vegetarian	3	2.5
	Semi-vegetarian	68	56.2
	Non-vegetarian	49	40.5
Source of drinking water available	Piped water	118	97.5
	Tube well	1	0.8
	Hand pump	1	0.8
	Others (Mineral water plant)	1	0.8
Availability of refrigerator at home	Present	94	77.7
	Absent	27	22.3
History of Food poisoning in the last 6 months	Yes	7	5.8
	No	114	94.2

The association of knowledge of food safety of the women participants with that of the community from among the various socio-demographic variables was found to be significant. ( $p=0.02$ ). The association of attitude of the women participants towards food safety with that of the occupation ( $p=0.037$ ) was found to be significant, to that literacy was very highly significant ( $p < 0.001$ ) and to that of socio-economic status was highly significant. ( $p=0.001$ ). The association of practices of food safety of the study subjects with that of the literacy found to be very highly significant ( $p < 0.001$ ), with type of family was found to be significant ( $p=0.04$ ) and also with that

of socio-economic status was found to be highly significant. ( $p=0.008$ ).

The Mean  $\pm$  SD score of knowledge among the women participants in the study was  $05.21 \pm 1.12$  with minimum of 3.0 and maximum of 8.0. The Mean  $\pm$  SD score of attitude among the women participants in the study was  $13.47 \pm 3.76$  with minimum of 3.0 and maximum of 20.0. The Mean  $\pm$  SD score of practices among the women participants in the study was  $29.30 \pm 8.93$  with minimum of 4.0 and maximum of 40.0. [vide Table 3]

**Table -3: Distribution of study subjects as per the total score of Knowledge, Attitude and Practices of Food Safety**

Type of Total score	Mean $\pm$ SD	Minimum	Maximum
Knowledge	$05.21 \pm 1.12$	3.0	8.0
Attitude	$13.47 \pm 3.76$	3.0	20
Practices	$29.30 \pm 8.93$	4.0	40

Those women whose knowledge score was more than 5.21 were considered to have good knowledge of food safety. Only 35.5% of them were having good knowledge of food safety. The mean (SD) attitude score of the women was 13.47 (3.76). Those women whose attitude score was more than 3.76 were considered to have favourable attitude towards food safety. 54.5% of them were having favourable attitude towards food safety. The mean (SD) practice score of the women was 29.30 (8.93). Those women whose practice score was more than 5.21 were considered to have good practice of food safety. 57% of them were having good practice of food safety. [vide Figure 1].

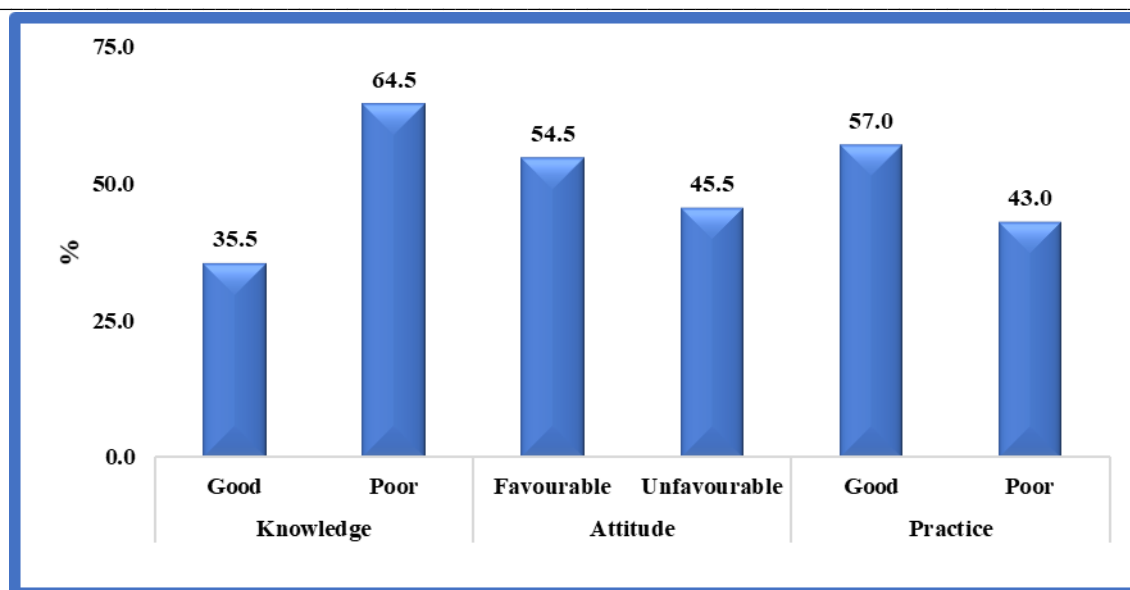


Figure-1: Distribution of study participants as per scores of knowledge , attitude and practices

The Spearman's rank correlation test showed positive correlation between scores of knowledge and scores of attitude of the women participants ( $r=.241$  ;  $p= 0.008$ ) and their correlation was found to be statistically significant. Positive correlation was also noted between scores of attitude and scores of practice of the women participants and their correlation was found to be statistically significant ( $r=.826$  ;  $p < 0.001$ ). [vide Table 4]

Table -4: The correlations between Knowledge, Attitude and Practices of food safety among study participants

	Knowledge		Attitude		Practice	
	r-value	p-value	r-value	p-value	r-value	p-value
Knowledge			.241	<b>0.008</b>	0.143	0.117
Attitude	.241	<b>0.008</b>			.826	<b>&lt;0.001</b>
Practice	0.143	0.117	.826	<b>&lt;0.001</b>		

## Discussion

The present study provides an insight into the knowledge, attitude and practices of food safety among the women of the colony in an urban slum located adjacent to Gayatri Vidya Parishad Institute of Health Care and Medical Technology, Visakhapatnam. There weren't many articles available for discussion as not much studies were done on KAP on food safety among women at the household level. It was very difficult to compare the results of the present study with that of the earlier studies due to the heterogenous character of the study populations. (those involved in cooking at house, hotels, street vendors, restaurants, etc.), social and cultural patterns in cooking practices, different study settings (urban, rural), different literacy levels, socio-economic status and different time periods of conduct of studies.

In this study that majority (38%) of the research participants belonged to 25-35 years. Similar observations were seen in the study by Iwu AC et al.[5], where the majority (33%) were seen in the age group of 21-30 years and in the studies by Hamed A et al.[6], Hashnuzzaman et al.[7], Sarada V et al.[8], Mendagudali RR et al[9]. and by Mukherjee S et al[10]. Hindus constituted 92.6% of the study population. Mukherjee S et al[10] in their study at Kolkata , West Bengal noted majority (78.3%) of the research subjects were Hindus. Mendagudali RR et al[9]. in their study done at Kalaburgi , Karnataka noted that majority (80.7%) of the study subjects were homemakers. 67.8% of the study subjects in the current study were homemakers. Sarada V et al[8]. in their study found majority (76.7%) were homemakers and also in the study by Mendagudali RR et al[9]. majority (88.7%) were housewives. This was found contradictory to the other studies where the respondents were either food handlers working in hotels, restaurants, institutions or street food vendors[5-7,10-15]. 33.1% of the women in this study were educated up to secondary level. Kalaburgi study reported similar findings where 51% were educated

up to secondary level[9]. 92.6% of the women participants in the study were married. A study done at Kolkata where found that majority (80.19%) of the study participants were married[10]. Study done at Kalaburgi noted that the majority (52.4%) were single including unmarried, separated or widowed[9]. Majority (46.3%) of the women participants in current study belonged to Class III or Middle Class as per modified B.G. Prasad's classification of socio-economic status. Sarada Vet al[8]. found that majority (68%) of the research subjects belonged to Upper Lower Class as per modified Kuppuswamy scale. 5.8% of the research participants in the current study had a history of food poisoning in their households in the last 6 months. Sarada Vet al[8]. in their study reported that 12% had a history of food borne illness.

The association of knowledge of food safety of the women participants with that of their community among the various socio-demographic variables was found to be significant. ( $p=0.02$ ). The association of attitude of the women participants towards food safety with that of the occupation ( $p=0.037$ ) was found to be significant, to that literacy was very highly significant ( $p < 0.001$ ) and to that of socio-economic status was highly significant. ( $p=0.001$ ).

Hamed A et al[6]. in their study found that association of attitude towards food safety with education was found to be significant ( $p = 0.013$ ). The association of practices of food safety of the study subjects with that of the literacy found to be very highly significant ( $p < 0.001$ ), with type of family was found to be significant. In a study by Mukherjee S et al[10]. in Kolkata, association of practice of food safety with education was found to be significant ( $p=0.019$ ). Sudershan et al[16]. reported significant association between literacy and food safety practices. ( $p < 0.05$ ).

In the current study the Mean  $\pm$  SD score of knowledge among the women participants in the was  $05.21 \pm 1.12$  with minimum of 3.0 and maximum of 8.0. The Mean  $\pm$  SD score of attitude among the women

participants in the study was  $13.47 \pm 3.76$  with minimum of 3.0 and maximum of 20.0. The Mean  $\pm$  SD score of practices among the women participants in the study was  $29.30 \pm 8.93$  with minimum of 4.0 and maximum of 40.0. It shows that average attitude and practice of food safety was high compared to knowledge. Mendagudali RR et al[9]. in their study noted that level of attitude and practices of food safety was higher than knowledge of the same. Rahman et al[17] also in their study revealed that average attitude and practice were high compared with knowledge.

Only 35.5% of the participants were having good knowledge of food safety. 54.5% of them were having favourable attitude towards food safety. 57% of them were having good practice of food safety. It was seen in the present study that many of the participants do not have knowledge of food safety compared to attitude and practice of food safety. Hamed A et al[15]. in their study found that 39.2% of the respondents had good knowledge of food safety and 56.3% of them had good safety practices and 61.2% of them had positive attitudes. Mendagudali RR et al[9]. in their study noted that the respondents had good knowledge (58.3%), attitude (81.7%) and practice (79%).

The Spearman's rank correlation test showed in this study positive correlation between scores of knowledge and scores of attitude of the women participants ( $r = .241$ ;  $p = 0.008$ ) and their correlation was found to be statistically significant. Mendagudali RR et al[9]. also reported a significant positive correlation between knowledge and attitudes ( $r = 0.176$ ;  $p = 0.002$ ). Similar observation was revealed by Norrakiah and Siow[18] that there was a significant positive correlation between knowledge and attitudes. ( $p < 0.05$ ). It was also seen in the study that there was positive correlation between scores of attitude and scores of practice of the women participants and their correlation was found to be statistically significant ( $r = .826$ ;  $p < 0.001$ ). Mendagudali RR et al[9]. also noted a significant positive correlation between attitudes and practices of food safety. ( $r = 0.190$ ;  $p = 0.001$ ). Norrakiah and Siow[18] revealed in their study that there was a significant correlation between attitudes and practices of food safety. ( $p < 0.05$ ). Rosnani et al[19]. however reported that there was no correlation between the score of attitude and practice.

### Conclusion

The knowledge, attitude and practices of the women participants towards 'WHO Five keys for Food safety' is abysmally low among the women residents in this study. The gaps in knowledge, attitude and practices concerning food safety therefore have to be plugged for promoting nutrition and have a healthy society.

### Recommendation

Awareness programmes on nutrition and the 'WHO Five keys for Food safety' including demonstrations on handling and cooking food have to be conducted to the women of the urban slum households including men. Information Education and Communication materials like pamphlets and posters displaying the correct methods of handling raw and cooked foods, precautions to be taken during cooking and storing of food at right temperatures should be distributed amongst them. These should also include information on food borne illnesses.

### Limitations

As the study design was cross-sectional, no causal association can be drawn with the association of the determinants and the knowledge, attitudes and practices of food safety. Since it was confined to the residents and the ecology of the urban slum, the salient findings of the study cannot be generalised to the entire population of Visakhapatnam. Very few studies are there on food safety issues among women in the community for a justifiable discussion. The practices of food safety are difficult to evaluate because of self-reported bias.

### Relevance of the study

The study highlights the need for promotion and reinforcement of food safety measures on a continuous basis in urban slums where

conditions of living, sanitation and hygiene are not up to the standards which result in problems associated with ill-health.

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### Conflict of interest

Nil

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