

# CONSUMER AWARENESS ON FOOD ADULTERATION

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**Abstract:** Food is the basic demand to sustain life and requirement for growth, development and proper functioning of human body. Now a days food adulteration is common. As a result of these malpractices, the ultimate victim is a consumer, who innocently takes adulterated foods and suffers. A study on the awareness about food adulteration among consumers in urban and coastal area were carried out using an interview schedule. Awareness of adulteration in foods was high among people in urban and coastal areas (100% in urban and 87% in coastal area). 46% opted profit as the main reason for adulteration in both urban and coastal. Only few of the total sample suggested that adulterants were added to food for creating color or appearance. In both urban and coastal only few people chose aginomotto as an adulterant.

**IndexTerms - tests to detect adulteration, food standards, health effects, criteria while purchasing food, adulterants**

## I. INTRODUCTION

Food adulteration is prevalent largely due to lack of awareness among common people, proper food laws, business ethics among the money minded manufacturers and standardization of food substances. A limited number of people die without food but large populations have been suffering from complicated diseases related to food adulteration and can even lead to death. These factors make food adulteration, one of the most serious problems present in our society that should be eradicated. Consumer is the largest economic group and central point of all marketing activities. With the rise in the income of people, the quality, the quantity and the sophistication of the consumer goods has also increased. The market is literally overflowing with the new products based on intricate technology. It is very difficult for the consumer to select one food item because of misleading advertisements, improper media emphasis and food adulteration. As a result of these malpractices, the ultimate victim is a consumer, who innocently takes adulterated foods and suffers.

A good buying behavior reflects philosophy about the nature of consumer and provides a logical means of organizing the vast quantity of information on variables that influence the buying practices. Buying practices involves the determination by market agencies of kind, qualities and quantities of goods desired by consumer. Buyer has to find out the desired qualities of goods sold at satisfactory prices. Buying consumes a great deal of time, energy and money. Effective buying requires a specialized knowledge of content of goods, their resources and their use (Garman and Jonest, 1992).

When the price of the food production is higher than the price which the consumer is prepared to pay, the seller is compelled to supply a food product of inferior quality. Thus adulteration occurs. Low quality, cheap, non-edible substances with food and make it adulterated. The cheap, low quality and generally non-edible substances are mixed which are purposely mixed with food items to earn profit are called adulterants. Food adulteration is a serious crime which is punishable under the law. Consumption of adulterated food can cause serious disorders such as diarrhoea, asthma, ulcers, food poisoning, cancer and may even result in death (Tiwari, 2016).

## II. MATERIALS AND METHODS

### Area of study

The consumers of urban (Ravipuram) and coastal (Puthuvype) areas (100 each) of Ernakulam district.

### Selection of sample

A total of 200 subjects, comprising of 100 each from urban and coastal were selected by random sampling method.

Simple random sampling is the basic sampling technique where we select a group of subjects (a sample) for study from a larger group (a population). Each individual is chosen entirely by chance and each member of the population has an equal chance of being included in the sample. Every possible sample of a given size has the same chance of selection. (Definition taken from Valerie J. Easton and John H. McColl's [Statistics Glossary v1.1](#))

### Tool used

The information awareness on food adulteration was collected from the home makers of urban and coastal area with the help of a structured questionnaire in urban area and interview schedule in coastal area due to the lack of detailed knowledge on the topic in coastal area.

## III. RESULTS AND DISCUSSION

### 4.1 General Information

The general information of the subjects includes number of subjects, educational qualification and occupation.

#### 4.1.1 Distribution of subjects

**Table.1 Number of subjects**

Area	Number of Subjects (N=200)		Total N=200
	Male (N=100)	Female (N=100)	
Urban	32	68	100
Coastal	19	81	100
Total	51	149	200

In the study, a higher proportion of men in urban area were in purchase of food items while 19% were men. 19 % were male and majority of the subjects were female (81%), because in both areas purchase of food items were carried out mainly by females. Comprising of both males and females based on the person responsible for purchasing the food.

Studies conducted by Pande (2000), revealed that homemakers were the actual buyers for the food in the family. Home makers took independent decision in all the areas of food buying except financial aspect.

Education	Urban	Coastal	Total
LP	0	11	11
UP	1	14	15
HS	9	40	49
PDC/HSS	8	16	24
UG	24	12	36

PG	36	2	38
Above PG	22	0	22
illiterate	0	5	5

Educational qualifications of the samples were found out using the questionnaire. 40% of the samples of coastal area were with high school level education and 36% of samples in urban area were with post graduate level of education. In urban area there were no samples who are illiterate and with lower primary level of education. In coastal area 5% of the samples were illiterate and no samples were with an educational qualification above post graduate. In urban area there were 22% of the samples who have above post graduate qualification.

Occupation	Urban	Coastal	Total
Unemployed	22	71	93
Daily wage	1	12	13
Employed	67	17	84
Pensioners	3	0	3
Business	5	0	5
Others	2	0	2

Majority of the female samples of the coastal area were unsalaried and only 22% of the samples of urban area were unsalaried. 67% of the samples of urban area were salaried. There were no samples from coastal area who are pensioners and doing business.

#### 4.2 Food consumption pattern of the subjects

Food consumption patterns of the subjects were determined because information like incidence of food adulteration can be detected.

##### 4.2.1 Taking food outside the home

It was seen that more of subjects in the urban area used to consume food from outside the home and more frequently than the subjects in the coastal area. More than three fourths of the subjects from urban area used to eat food from outside (78%) the home while it was only one fourth of subjects (22%) from coastal area. Most of the subjects of coastal area used to pack their foods from home while going for work.

##### 4.2.3 Source of drinking water used by the subjects

The details on drinking water were elicited to determine the knowledge of subjects on adulteration in drinking water available commercially.

**Table.2 Source of Water**

Source of Water	Urban (n = 100) *	Coastal (n = 100)*	Total N = 200
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From home	50	76	126
Bottled water	29	11	40
Public supply	3	1	4
combination (according to convenience)	18	12	30

\*multiple response

From the above table it is understood that majority of the coastal subjects (76%) used to carry water from home while going outside whereas only half of the subjects from urban area (50%) used to carry water from home. Only 1% of the coastal subjects used to drink water from public water supply. Around 29% of the subjects from urban area and 11% from coastal area used to drink bottled water while going away from home.

#### 4.3 Details on Awareness on food standards

The details on the awareness about food standards and criteria for selecting food items were collected.

##### 4.3.1 Criteria checked for purchasing food items

The data collected on criteria checked for while purchasing food items were useful for understanding the awareness on food standards among the subjects. Following table shows the criteria which were regarded as important to the subjects while purchasing food items.

**Table.3 Criteria checked for while purchasing food items**

	Urban (n = 100)*	Coastal (n = 100)*	Total (N = 200)
Manufacturing date	94	68	89
Nutritional value	33	3	1
Ingredients	44	21	1
Food standards	36	11	21
Did not check	1	32	33

\*multiple response

It was seen that, 94% subjects from urban area and 68% of the coastal area used to buy food items by checking manufacturing date. About 32% of the samples from coastal area did not check any specific aspect for buying food items while it was only 1% in the urban area. A few of the subjects in coastal area used to check nutritional value, ingredients and food standards while buying food products. In urban area 36% of the subjects used to check aspects like food standards before buying a product. Hence awareness on need for checking food labels and information was more among urban subjects.

According to Pande (2000), availability of money and availability of the product in the market were the most important factors, whereas food habit and nutritional requirements were the least important factors while buying a food product.

A study was conducted by Tiwari (2016) to know the common food adulterants and knowledge about adulteration among student of Gorakhpur District. Multistage stratified sampling techniques were used for the selection of the subjects. Majority of subjects (48%) checked only expiry date, followed by ingredients and price at the time if buying any food articles.

Recent studies by Pillai and Chakraborty (2017), to assess the buying practices of the rural homemakers indicated that only 20% of them always purchased packed food, 50% of them always checked M.R.P and only 3.33% checked the weight. None of the homemakers checked the nutritional label. Only 23.33% were aware regarding food safety and standards symbol. The study findings revealed that there was significant association of knowledge level with selected socio demographic variables i.e. education, occupation.

#### 4.3.2 Awareness on Food Standards

**Table.4 Awareness of the subjects on Food Standards**

<b>Food Standards</b>	<b>Urban (n = 100)*</b>	<b>Coastal (n = 100)*</b>
<b>AGMARK</b>	73	21
<b>FPO</b>	35	14
<b>ISO</b>	72	16
<b>FSSAI</b>	48	14
<b>Not aware</b>	13	67

**\*Multiple responses**

The survey revealed that majority of the subjects of coastal area (67%) were unaware of the food standards, while it was only a meager 13% in the urban area. In urban area majority of the subjects were aware about various food standards where as only few subjects in the coastal area were aware of all food standards. Majority of subjects were aware of AGMARK and ISO Awareness about FPO was comparatively low in subjects of both urban and coastal areas compared to other food standards.

#### 4.4 Details on the awareness of food adulteration

Awareness on food adulteration among the subjects of both urban and coastal area were collected.

##### 4.4.1 Awareness of subjects on the foods commonly adulterated

Majority (79%) of the subjects in urban area and 64% of the subjects in coastal area opined that the processed foods are more prone to food adulteration. Around 40% of the subjects in urban area reported that cereals and cereal products such as rice, rice flour and wheat flour were the most commonly adulterated foods while 44% claimed it was milk and milk products as commonly adulterated food products. Sugar was cited as one of the most adulterated product by 25% of the subjects in urban area while in coastal area only few subjects cited sugar as the most adulterated food item.

##### 4.4.2 Awareness about the reason for food adulteration

The details on the reason for food adulteration mentioned by both the urban and coastal area subjects are shown in the following table.

**Table. 5 Awareness about the reason for food adulteration**

Reasons	Urban (n =100) *	Coastal (n =100) *	Total (N=200)
Increased Profit	73	51	124
Improved Color/appearance	10	14	24
Increased shelf life/preservation	6	11	17
To increase quantity	6	6	12
Others	13	11	24
Not aware	10	22	32

\*multiple response

The data from the above table reveals that majority of the subjects from both urban and coastal area cited increased profit of the trader as the reason for increased food adulteration. Around 10% of the urban subjects and 14% of the coastal subjects mentioned that food adulteration was carried out to increase, make the where appealing and attractive to the consumer by the color and appearance of the food items. Comparatively less subjects (6%) from the urban area and 11% of the coastal area specified that the reason for food adulteration was to increase shelf life, quantity and for preservation. About 11% of the subjects of coastal area believed that the adulterants were added to the food items to increase the taste of food items and 13% of the urban subjects believed adulteration was due to the lack of honesty, to increase taste and smell and due to availability of raw materials.

#### 4.4.3 Awareness on simple tests for detecting food adulteration

Around 50% of the subjects of urban area were aware about some simple tests which could be done at home to detect food adulteration. Majority of the subjects of coastal area were unaware about the food adulteration identification tests. From the 50% of the subjects in the urban area only 14% used to do tests at home. 98% of the subjects of coastal area did not carry out any tests at home due to the lack of awareness about the simple tests for detecting food adulteration in regularly used food products.

#### 4.5 Awareness on Health Effects caused by food adulteration

The knowledge about the health effects caused by adulterated food products were higher among subjects in urban area (95%). They gave more attention to the news and information available in various digital and printed social media sources. 92% of the samples of coastal area were aware about the health effects caused by the food adulteration.

The availability of information about food adulteration among the public is very much helpful and influential for creating awareness among them.

#### 4.5.1 Awareness on methods to avoid adverse health effects caused by food adulteration

The information on awareness of methods to avoid adverse health effects caused by food adulteration helps to understand different methods to prevent food adulteration. The following table shows the details on the methods which the subjects had chosen.

**Table.6 Methods to Avoid Adverse Health Effects of Food Adulteration**

Methods	Urban* (n = 100)	Coastal* (n = 100)
Avoid taking foods from outside eateries	27	50

<b>Growing Kitchen garden</b>	<b>18</b>	<b>12</b>
<b>Avoid readymade curry powders and junk foods</b>	<b>20</b>	<b>3</b>
<b>Use branded products</b>	<b>10</b>	<b>3</b>
<b>Check food standards</b>	<b>13</b>	<b>0</b>
<b>Not aware</b>	<b>30</b>	<b>33</b>

**\*multiple responses**

From the table it is clear that, to avoid the health effects by harmful adulterants and pesticides, most of the subjects in urban area chose the safe method of avoiding food from the eateries outside the home and to choose branded food products from certified shops with good quality and hygiene. Only 3% of subjects in urban area use organic food products and 27% of the subjects chose homely foods for reducing health effects caused by adulterated food products. In coastal area 50% of the subjects specified avoiding food from outside to reduce the health effects caused by the adulterated foods while 12% of the subjects chose growing of kitchen garden to avoid food adulteration. Only 3% of the subjects in coastal area opined that cooking properly can reduce the effect of food adulteration.

## CONCLUSION

Consumers in coastal area comprising 81% were women and in urban area 68% were women. Majority of subjects from urban area (78%) used to eat food from outside home. Only 50% of the subjects of urban area used to take drinking water with them while going outside. The subjects of urban area (29%) and of coastal area (11%) used to drink bottled water. Most of the selected subjects used to check manufacturing date before buying any food products. Only 3% of the subjects in coastal area used to check nutritional value of the food item before purchasing. Than the subjects in coastal area the subjects of urban area were more aware on the food standards and its importance. Within that majority of the subjects were aware about AgMark and ISO. According to the opinion of the selected subjects in both the urban (79%) and coastal (64%) area, processed foods are more prone to food adulteration, and the reason for food adulteration was to increase profit of the traders or manufactures. Only 6% of the both urban and coastal area opined that the food adulteration is for increasing the quantity of the food items. The 50% of the subjects of urban area were aware on the tests to be done to detect the food adulteration. The subjects of coastal area were not much aware on the tests. The subjects of urban area (95%) and coastal area (92%) were aware about the health effects caused by the harmful adulterants used in the foods. Around 27% of the urban subjects and 50% of the coastal subjects opined that the food adulteration can be reduced by avoiding food from outside home. Only 3% of the urban subjects use organic food products as remedy for the food adulteration.

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