

A Study on Consumer Awareness on Food Adulteration

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Abstract. Food plays a major sustaining role for everyone. As living beings, we rely on food and water for survival, which is one of the necessities of mankind. Post COVID-19 is said to have increased focus on food safety. Due to Intensive agriculture, globalization of food trade, street food, mass catering, food safety has put a big question mark though technology and innovation exist. The main idea of food safety is to bring safe and nutritious food to the plates of the customer. There are several hindrances which lead to hazards in the health of the customers. The study is intended to analyze the extent of consumer awareness about food adulteration in Mangalore city. The study also analyzes the experiences of food adulteration. The Random sampling technique is used for data collection and for the analysis of data, SPSS 24 has been used. Friedman test, point biserial correlation test was used to analyze, compare and interpret the data. Problems encountered by consumers are correlated with various demographic variables. The findings of the study proved that there is strong need to spread the awareness about the food adulteration

Keywords: Adulteration Awareness; Food Adulteration; Food Safety

1. Introduction

Food is raw material which is fully processed or partially processed or unprocessed, which is meant for human consumption for the nourishment of the body. Safe food is a guarantee that the food does not cause any harm to the consumer. When food is acceptable to eat, then only it is considered as fit for human consumption. Food must be edible, standard and is safe to the body, health and the mind. Zero hunger by 2030 is the aim around the world. This could be achieved when safe and nutritious food comes to the plate of the consumer. There should not be any hidden hunger, which leads to various acute and chronic diseases. Therefore, foodborne diseases pose a great

challenge to the stakeholders in the food chain, which is a burden. Stakeholders in the food chain are the one who is growing, processing, storing, transporting, distributing, retailing, serving it and all those who consume it. These foodborne diseases can be prevented and avoided easily. The challenge is More than 200 types of diseases are caused by physical, chemical, biological contaminants in the food. This mainly affects the vulnerable and marginalized population who are economically not strong. There are certain programs of the Government of India where they made it mandatory giving vitamin A capsules to preschool children, iron tablets to adolescence girls, food quantification like salt with Iodine, pulses with ions etc. These are some of the policies that have been made based on the requirements. Food has to be safe to prevent foodborne diseases. For which it is important that contamination and food spoilage must be avoided by handling the food properly. Which means it has to be handled properly from Farm to Fork. All the processes must be foolproof. Food spoilage, food contamination, foodborne diseases, food poisoning can be avoided by keeping the food safe. Food can be kept safe by personal hygiene, handling it properly and hygienic surroundings. These are safe Food practices at the time of buying, storing, preparing, serving, eating, packaging, handling it and most importantly what we do with the leftover food is as important as food processing. Food safety describes handling, storage of food in every way possible where we prevent foodborne illness. COVID-19 pandemic brought the aspect of food safety to the forefront, and we have to have a clear understanding as to what happens when the consumption of food, which is a necessity, is considered risky and deemed to be unsafe. Food is said to be unsafe when its nature, substance and the quality is affected to an extent where it renders injury to the health of the consumer. It can contain wholly or part of filthy material, adding of substances directly as an ingredient, which is not permitted. Food articles being colored, containing added preservatives, food processed and prepared under insanitary conditions, coating, polishing which damages food, misbranded food articles and substandard food which contains pesticides and other contaminants are considered as unsafe. Unsafe food has health impacts as well as non-health impacts. Health impacts include unsafe foods that lead to various types of diseases, whereas Non health impacts are associated with the economy of the country. Today, the food supply chain exceeds borders. As we are going overseas, new threats are arising due to food production, distribution and consumption. Food poses a global health threat

which endangers everyone. Infections which are caused due to unsafe food have an impact on the fragile health of poor infants. It creates diseases and malnutrition in infants, young children and adults. One in 10 people after eating unsafe food fall ill. As a result of contaminated food, productivity is lost.

Unsafe food contains harmful bacteria, chemical substances, viruses which cause disease from Diarrhea to Cancer. One major threat which contributes to unsafe food is food adulteration. Food adulteration is the addition of ingredients that are not needed in the procurement, processing or preparation of a food, which makes food unsafe and substandard. It is intentionally done by unscrupulous food business operators for financial gain. An adulteration leads to serious health problems apart from creating economic problems. A food adulteration is addition or substitution of inferior substances or removal of valuable ingredients from the food, wherein its natural composition changes. Such an act leads to risky health and economic disadvantage. It deteriorates the quality of food, and it is injurious to health. Adulterated food is of cheap quality, and we lose valuable or necessary constituents of food. It becomes an imitation. It leads to substandard quality of food. Food adulteration is always intentional, but many times it is incidental also. One of the major adulterants can be water that we use for processing food. It must be free from all the contaminants that are Physical, chemical and Microbial. Various types of food adulterants include economic adulteration, microbiological contamination and adulteration, presence of filth, presence of poisonous substances in the food. We are not only compromising the health of the consumer, but a large portion of food is wasted as we discard adulterated food. There is a gap in supply and demand. FSSAI campaigned for consumer awareness on food adulteration by releasing the DART book (Detect Adulteration with Rapid Test), which will help to detect food adulteration at home. Detection of adulteration is one side of the coin. But the main intention is to find out the source of adulteration. As a result, a lot of penalties and cancellation of FSSAI licenses are happening. Despite such stringent measures, food adulteration is prevailing. Large number of products which fail in the food laboratory are going into waste as they are unfit for consumption. Food grown by farmers with multiple resources does not reach consumers, as middle men are to be blamed for the serious crime of food being adulterated. More than half of the food prepared, cultivated, grown is wasted because of food adulteration. On one side the Consumer is losing his

money and on the other side the hard work of the farmer is going in vain. To prevent food adulteration we need to have regular stringent surveillance, monitoring, inspection done by food safety officers of the state and union territories. Action has to be initiated against defaulters of food business operators. To enhance availability of good quality of food, strict vigil has to be maintained from all the Corners whether manufacturer, wholesaler, retailer, offenders under the provisions of Food Safety and Standard Act of 2006. It has also introduced the policy for Rapid Analytical Food Testing for regulatory purposes. We as a consumer look into the remedies of the problem and therefore we need to have improved storage facilities. In developing countries like India, proper storage facilities for freshly grown grains, fruits and vegetables are ineffective and inefficient. We need to have improved handling practices. Selling cheaper food at higher prices should be taken away from the minds of the vendors. Food safety training and certification programs can be given to the stakeholders. New technologies and simple test measures to detect food adulteration must be adopted. There must be demarcation between those who are fair and unfair. Penalize the unfair, and the one who is fair can be given some recognition or award so that they are encouraged to do still more fair in their practices of food selling. It is the middlemen who are playing between farmers and consumers. Therefore, they must be educated and penalized for their actions. Stringent measures must be strictly passed not only by government but also the public must be aware of such measures

1.1 Literature Review

Ishvarchandra et al., (2022)¹⁴ in their study made an attempt to understand the techniques to detect adulterants found in food products and using chemo metrics in detecting food adulteration. The study found that emerging innovative and new electrical techniques can be very useful in detecting and identifying the adulterants found in food. Jyotsna and Ambalika (2021)¹⁰ conducted study on the different ways of adulterating the food and punishment for food adulteration under different Acts. Study reveals that pandemic announcements in India have resulted in increased food adulteration. Introduction and enforcement of different Acts has not reduced food adulteration. The punishment for adulterating food in the form of a fine is comparatively less. Ankita et al., (2020)² in their study attempts to highlight the

difficulties associated with food adulteration. According to the study, the government should inspect food stores. The government must inspect both local and branded food stores on a regular basis. Hiralal and Debabrata (2019)⁷ in their study sheds light on various acts of food adulteration. Food adulteration can be avoided by providing education, population control, poverty

alleviation, employment, regular inspection of food markets, social responsibility regarding food storage, and the implementation of proper food laws. Anu Joseph et.al., (2018)⁸ in their study mentioned Consumers in urban areas were more aware of food fraud. Consumers in urban areas had awareness of the health risks posed by contaminated food. Navya, Sukumaran and Raju (2017)¹⁷ in their study attempted to identify food adulteration in a few selected products. Consumers are not fully aware of food adulteration and its consequences for health. Joshi et.al.(2017)⁹ in their study observed that women are generally aware of food adulteration and how it affects people's health. Compared to women's income, education level had a positive impact on awareness of food adulteration. Women primarily learned about food adulteration through social media rather than print media. Dhanvijay and Ambedkar (2015)³ in their study pointed out that respondents were aware of some food adulterants, such as urea in milk, roasted nuts, and pulses, but they were unaware of others, such as ghee, coffee, and sago. Nagvanshi (2015)¹¹ in their study found that many of the female respondents knew about food adulteration. Although consumers are aware of the AGMARK certification, they are not aware of the health risks associated with eating adulterated food. Consumer awareness campaigns can raise respondents' awareness of food adulteration. Sharifa and Tahmeed (2014)¹³ carried out a preliminary investigation to determine the level of adulteration in food products between 1995 and 2011 and consumer awareness. Consumers are unaware of what constitutes food adulteration, commonly adulterated foods, and the adulterants used. Narayan (2014)¹² in his study attempts to identify the causes of food adulteration, such as increased demand for a product, the desire to compete, the greedy behavior of producers to increase product, a lack of manpower and food processing techniques, and a lack of information on diseases caused by food adulteration. Prashanti (2014)¹⁵ in their study highlights that adult women were generally knowledgeable about milk-borne illnesses, adulterants, synthetic milk, thickening agents, and preservatives. Among the chosen

respondents, there was also a lack of knowledge about the health implications of food adulterants. Through an awareness programme, consumers need to be made aware of health issues such as gastrointestinal nervous, kidney, cardiovascular, muscular, visual, reproductive, and skin problems. El- loly et al., (2013)⁴ in their study on food adulteration discovered that food adulteration can cause serious health problems for consumers. Food adulteration by producers can be motivated by both intentional and unintentional factors. Abid Faheem et.al., (2013)⁵ made study on 75 families. According to the study, the majority of respondents had a moderate understanding of food adulteration. Respondents' age and education level have a significant impact on their awareness of food adulteration. Food adulteration awareness campaigns should target illiterates and low-education consumers. Afzal et al (2011)¹ observed in their study that the main cause of food adulteration is producers' greedy desire to maximize profits in a short period of time. Nidhi and Priti (2009) in their study found that the chosen respondents knew little about their rights and obligations or about food adulteration. According to the study, low-income groups need social references to consumer literacy. Gupta and Panchal (2009)⁶ conducted a study on 281 families to determine the factors that directly affect food adulteration awareness. According to the findings of the study, highly educated people are more aware of food adulteration. Qualification, family income, and occupation are all factors that have a direct impact on food adulteration. Thakur et al (2009)¹⁷ in their study observed that, majority of consumers were unaware of the various tests used to detect food adulteration, such as physical and chemical tests.

2. Methodology

2.1 Objective:

The study is intended to analyze the extent of consumer awareness about food adulteration in Mangalore city. The study also analyzes the experiences of food adulteration

2.2 Hypotheses of the Study:

Hypothesis is developed to analyze the extent of consumer awareness about food adulteration in Mangalore city and experiences of food adulteration. It is developed as follows;

H₁: There is significance difference between various sources of information regarding food adulteration

H₁: There is correlation between awareness about food adulteration and demographic variables.

H₁: There is correlation between awareness of Food Safety and Standards Regulations and demographic variables.

H₁: There is significant difference in being the victim due to food adulteration

2.3. Research Methodology:

This study is focused on analysing the Extent of consumer awareness about food adulteration in Mangalore city. The study also analyses the experiences of food adulteration. Both primary and secondary data are used. The primary data are collected using a structured questionnaire administered through convenient sampling. There, 178 respondents are selected for the study. The study is covered in Mangalore City. To measure the Extent of consumer awareness about food adulteration, a five-point Likert scale was used (1-very high to 5-very low). The validity of the questionnaire was tested using Cronbach's coefficient alpha, calculated to test the reliability and internal consistency of the responses obtained from the respondents. Cronbach's coefficient of 0.7 was found adequate for full scale collection of data. The measurement instruments were constructed and extracted a more comprehensive questionnaire based on the items of interest for this study

3. Results and Discussion

Demographics were collected to know the background of the consumers, such as gender, area and age. This will help us understand the diversity of respondents in the research area. Gender: It was found that 65.7% of the respondents were female and 34.3% were male. Age: It was found that 30.9% of the respondents were below 20, 23.6% between the age group of 20-40, 17.4% between the age group of 40.-60 and 28.1% above the age of 60. Area: It was found that 51.7 % of the respondents were from urban areas and 48.3 % were from rural areas.

Hypotheses testing

1. H₁: There is a significant difference between various sources of information regarding food adulteration.

The results showed that the mean ratings of the source of information regarding food adulteration like Television, Newspaper, Friends/Neighbour, Radio, Website, Social media were in the range of 2.29 to 3.47 with S.D 0.945 to 1.209. The highest mean value shows radio (4.54) with first rank, followed by website with 3.58 mean value with second rank and the lowest mean value shows social media with mean value of 2.75. The calculated Chi-square value is 133.210. The significant value is less than 0.01. Hence, it can be inferred that there is a significant difference in the mean ranking between the variables.

2. H₁: There is correlation between awareness about food adulteration and demographic variables.

A point-biserial correlation was run to determine the relationship between awareness about food adulteration and demographic variables. There is a positive correlation between awareness and age. Where older respondents are aware when compared to younger ones. There is a negative correlation between awareness and area. Where urban respondents are aware compared to rural. There is a negative correlation between awareness and gender. Here, females are more aware than male respondents.

3. H₁: There is correlation between awareness of Food Safety and Standards Regulations and demographic variables.

A point-biserial correlation was run to determine the relationship between awareness about Food Safety and Standards Regulations and demographic variables. The regulation are ranked from 1 to 8 as follows Food Products Standards and Food Additives as 1, Prohibition and Restriction of Sales as 2, Health Supplements, Nutraceuticals, Food for Special Dietary Use, Food for Special Medical Purpose, Functional Food and Novel Food as 3, Organic Food as 4, Alcoholic Beverages as 5, Safe food and balanced diets for children in school as 6, Foods for Infant Nutrition as 7 and Vegan Foods as 8. There is a positive correlation between awareness about Food Safety and Standards Regulations and age. There is a negative correlation between awareness of Food Safety and Standards Regulations and the area. There is a negative correlation between awareness of Food Safety and Standards Regulations and gender.

4. H₁: There is significant difference in being the victim due to food adulteration

Various food products like Milk and milk products, oil and fats, sugar and confectionery, food grains, Salt, spices/ condiments Fruits /vegetable, Beverages were examined using Mann Whitney test. The study revealed that there is no significant difference between respondents of urban and rural areas, with $p > 0.05$. So, the hypothesis is rejected. It is observed that urban as well as rural customer were victims with regard to food adulteration

4. Conclusions

The harmful effects of food adulteration increases impurity in food, nutritional value will be poor, and it may lead to various diseases in addition to being cheated of our hard-earned money. Adulterated foods that we encounter on a daily basis are dairy products, Atta, edible oils, pulses, coffee, non-alcoholic beverages, curry powders which are part of our daily consumption. Therefore, while making the purchases one has to make sure that the products they buy are of a good branded company, check for various details like FSSAI licence and registration number with proper expiry date or best before date mentioned on it. Food adulteration can be avoided by properly educating the consumers through various media. There is the need for a two-way mechanism, at one end proper implementation of the Act by the concerned authority and at the other end consumers need to know his rights and he can educate himself and safeguard his interest. We have the right to acquire a fresh and healthy diet for maintaining good health. In order to access safe and nutritious food for promoting good health, it is our right to get good food. Community health is nation's health and community health is possible if each one of us is healthy, each family is healthy. Once the community health is reached, we will be reaching nation's Wealth.

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