Chapter 9: Safe Food Everywhere

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Chapter 9: Safe Food Everywhere

Unsafe food and poor diets create a vicious cycle of disease and malnutrition particularly affecting infants, young children, elderly and the sick. The ‘food ecosystem’, includes not only food business operators (FBOs) but also the consumers. While food businesses may adopt a casual approach in maintaining food safety and hygiene standards, consumers tend to make wrong food choices (figure 1).

Trap of malpractices can be broken by adequate food safety education. This chapter gives simple tips on food safety to empower consumers as well as FBOs. If we look into the food safety ecosystem closely, it can clearly be seen that, any individual eats either at home or out of home. Hence, accordingly the chapter will look at safety issues at home as well as when the individual eats out whether in restaurants, workplace, school or even at a place of worship.

Food Safety Practices at home

Culture of food safety practices should start at home. If we inculcate these habits within ourselves, we spontaneously will expect the same practices by the food service industry. This will drive the food service industry to adopt the best practices. Food safety can be ensured at the household level by being mindful of personal hygiene, selection of right food, proper food handling and waste disposal.

Personal Hygiene

We ourselves can be the biggest source of contamination. The following precautions need to be taken by all people handling food so that it does not become contaminated:

- Wash hands every time you handle food, go to the washroom or touch surfaces likely to be contaminated like doorknobs, walls, hair, skin, etc.
- Wear clean clothes and preferably an apron to keep street clothes away from food.
- Keep hair short or tied up and covered to prevent strands from falling into food.
- Keep nails short and clean.
- Avoid wearing rings and other pieces of jewellery from which stones, etc can fall into the food.
- Wear gloves while handling food which will not be cooked or reheated like salads.
- Cover all wounds and cuts on your hands properly and preferably wear gloves so that neither the wound nor the bandage comes in contact with the food.
- Do not bring street shoes into the kitchen.
- Avoid cooking if unwell especially with diarrhoea or vomiting as you could be a carrier of a foodborne illness.

Selecting safe and good quality foods

Healthy and safe eating begins with choosing the right kind of foods. It is important that we select safe and wholesome ingredients to prepare our food. Unless contamination is visible in the form of dirt, mold growth, decay, signs of insect or pest infestation (eggs, body parts, hair, excreta, etc.), it is not simple to detect if the food item is safe. One needs to look out for some cues which point to the product being unfit for consumption or at least being on the verge of spoilage.

Food adulteration, as discussed in an earlier chapter, is another menace one needs to be aware of. What can help is the knowledge about the common adulterants, foods which are likely to be adulterated and simple tests for detection of adulteration which can be done at the household level. It is also helpful to know what to look out for in packaged foods. The label of these foods can help the consumer to identify foods which are more nutritious. The sections which follow include some pointers to help consumers select both safe and nutritious foods.

Consumers need to look for certain features before buying different types of foods. Figure 2 illustrates what to look for while shopping for different food groups.
Here are some tips on what to keep in mind while purchasing food from the market:

- Buy fresh, seasonal and locally available vegetables and fruits at the right stage of maturity.

- For packed items, look for FSSAI License, expiry date/best before date along with MRP. Read nutritional content, choose the food items depending on the body type and nutritional need.

- Spices and condiments should be closely inspected before purchase, especially powdered spices. Always buy packaged powdered spices and look for quality marks like ISI or AGMARK.
• Buying food which is at the right temperature is also important. Certain high-risk foods are sold either chilled or frozen. Frozen foods should be frozen solid at the time of purchase. Make sure these are purchased at the end of the shopping trip so that they can be brought home as soon as possible and put in the freezer until use. Maintaining the cold chain is important for foods like meat and meat products, milk and its products as microbes tend to multiply very fast in such foods at ambient temperatures.

• Buying food from reliable sources is also an important step towards ensuring safe food. This reduces the chances of the food being adulterated.

Food handling

Once procured, foods also need to be processed, stored and handled with care to ensure that they stay safe. WHO has outlined five keys to keeping food safe (figure 3). The first is cleanliness. We need to ensure that our hands are clean before handling food. Raw food also needs to be washed and cleaned thoroughly to get rid of visible dirt. It is also important to keep all food contact surfaces clean like kitchen equipment, knives, storage containers, etc. The kitchen and storage areas need to be protected from pests as well as environmental contaminants. The second key is to separate the raw and the cooked foods as there are chances of cross-contamination. Raw food may be contaminated with dust, pesticide residues, microbes which may be passed on to cooked food if both are kept in close contact or if same utensils, knives, spoons are used for both. Raw meat, fish and poultry have a very high microbial load and the same chopping board and knives should not be used for cutting vegetables unless they have been thoroughly sanitized.
Food needs to be cooked thoroughly to destroy any disease-causing microbes which may have been present in the food even after washing and cleaning. The core temperature of the food should reach beyond 70°C, preferably 75°C in tropical climates to ensure that all pathogens have been destroyed. Previously cooked food which had been refrigerated needs to be reheated to this temperature before consumption. All food should be stored at appropriate temperatures. The danger zone between which microbes are known to multiply rapidly is 5-65°C. Hence foods which need to be kept cool should be refrigerated and kept below 5°C. Raw flesh foods are best kept frozen at below -18°C. When it is time to cook or consume frozen food, thawing should either be done in a microwave or under running tap water. Never leave the frozen food at room temperature to thaw. This encourages the growth of microbes. Once thawed the food should not be refrozen again because the microbial load has now increased, probably to dangerous levels. Hence it is advisable to freeze foods in packets or containers which contain amounts which are likely to be consumed by the family in one sitting. Cooked foods should not be left at room temperature for more than 2 hours. If the food is to be served hot after a few hours, it can also be kept hot (like in a bain-marie) above 65°C.

To begin with, it is important to procure good quality raw ingredients from reliable sources. Packaged food products need to be checked for their best before/expiry dates. Storage
Instructions by manufacturers mentioned on food labels should be read and followed. Potable water should be used to clean the fruits, vegetables, flesh foods before consumption, cooking or storage.

**Waste disposal**

Households generate waste which needs to be disposed of responsibly. It is important to segregate waste so that it can be sent further for appropriate disposal (figure 4). For instance, food scraps, peels, inedible portions of fruits and vegetables, eggshells, bones, and such other organic matter can be used in homes or colonies itself for making compost. It can also be safely sent to landfills. Other waste like packaging material - paper, cardboard, plastic, tin, etc. needs to be recycled and reused. Waste bins in the kitchen should have tight fitting lids. There should be separate waste bins for biodegradable waste (vegetable matter, paper so that it may be composted later) and recyclable waste (polythene, cardboard, glass, etc.). These bins should be emptied daily and kept thoroughly clean and covered so that they don’t attract pests. They would also need to be disinfected regularly and the area kept odour free by not letting garbage spill or accumulate for long. Avoid throwing solid waste into drains as they tend to get choked and result in backflows. Keep sinks and drains clean. Drains should have traps or covers which do not permit entry of pests like cockroaches or rats.

![Waste Segregation](image)

*Figure 9.4: Waste Segregation for Better Disposal*
Food Safety Practices Outside Home

Changing lifestyles and eating patterns coupled with increase in purchasing power have led to an increase in the number of people eating outside home. Meals prepared in restaurants, fast food outlets and street food are gaining popularity. This has led to mushrooming of several small and large-scale catering units. This has raised the concern related to food hygiene and safety.

Major concerns in food service sector

Food safety lapses can have disastrous consequences resulting in food poisoning outbreaks and monetary losses for the FBO as well as the consumer. For the FBO it may be loss of business and getting stuck in legal proceedings against them, but for the consumer it leads to loss of wages due to absence from work coupled with medical expenses. In each type of FBO there may be different concerns regarding food safety (Table 1). Irrespective of the size of the operations of any food business, the basic principles of ensuring safe food remain the same. The Codex has outlined the essential principles of food hygiene applicable throughout the food chain and has indicated how these principles should be implemented to ensure safety of food from the ‘farm to the table’. FSSAI has also developed Food Safety Management System (FSMS) Guidance Documents which have been described in the previous chapter.

To ensure food safety in an establishment, one needs to consider various features - starting with the selection of site where the unit will be set up, to the design of the premises. In the premises, the design of the kitchen is of primary importance - the layout of the kitchen, i.e. area where the food will be stored, prepared and served, the drainage and waste disposal facility, and provisions for protection from pests.

Food service establishments can be temporary/mobile units or those which are fixed and so more or less permanent. A mobile food service establishment like a van, pushcart or even a movable stand, is a self-contained food unit which prepares and serves food to consumers. Street food vendors come under this category. A fixed food service establishment on the other hand operates at a specific location and probably has all the basic facilities like water supply, electricity, waste disposal system, etc. In contrast, these facilities are mostly not available in mobile units. Fixed establishments include canteens, restaurants, cafes, as well as food served in institutions like hostels, hospitals, schools, etc. A temporary food service establishment is usually one which sets up operation for a fixed number of days at a location- usually at a fair, or gathering for a festival, exhibition, or any other celebration/event. These units may be supplied with the basic amenities (water, electricity, waste disposal) during the event organized so that they can function smoothly.

With a surge in people travelling for business or pleasure, there is a focus on providing them with safe food during their long journeys by bus or train (wheels), airlines (wings) and ships (waves). Some of these journeys may last for a few days. Contaminated food can lead to serious food poisoning affecting several people at the same time. For railway and airplane journeys the food is generally prepared in advance. Care needs to be taken that this preparation is not too much in advance. Food should be fresh when loaded on trains or airplanes. Sometimes the food is served within a few hours of the journey, however in some long-distance flights, the food may be served 10-12 hours later. And if, trains or flights are delayed, the freshness of the food is further compromised. To ensure that the food remains...
safe, adequate cool and hot storage facilities should be available on board. The food should be kept safely packaged and unexposed to contaminants and pests. Only safe packaging material should be used which does not introduce chemical contaminants into the food. Also, safe potable water should be served. Maximum care must be taken for the quality of ice, which should be prepared using potable water and handled carefully.

Journeys on ships may last much longer – a few days to a few weeks. It is not possible for all food to be cooked in advance; hence ships have proper fully functional kitchens like any other hotel or restaurant. They need to follow the same principles of hygiene and sanitation as other food service establishments with proper storage facilities, food processing areas, cleaning areas and well-trained personnel.

Table 9.1: Concerns regarding food safety in different types of FBOs

<table>
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<th>Type</th>
<th>Issues</th>
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| School Meals and Canteens   | Children are the vulnerable population. It is essential that food prepared is safe and hygienic. The common issues in school meal service are:  
  - Lack of knowledge about food hygiene and safety.  
  - Lack of food grade equipment, utensils and cutlery  
  - Use of artificial colours and flavours to make food attractive. |
| Restaurants, Cafeteria      | Restaurants and cafeteria are most common places to eat nowadays. It is essential that the food hygiene and safety practices are followed. Some issues in restaurants and cafeteria are:  
  - Inadequate space for food preparation area  
  - Lack of food hygiene and safety knowledge  
  - Improper handling of food  
  - Temperature abuse |
| Dhabas, Street Food, Food Trucks, etc. | These are majorly part of unorganised sector. There is complete lack of awareness about food hygiene and safety. The key issues in such businesses are:  
  - Do not have FSSAI registration  
  - Can be exposed to environmental pollution  
  - Lack adequate structures, fitting and designs  
  - Use of non-food grade equipment, dirty dusters, etc.  
  - Lack of food hygiene and safety knowledge  
  - Improper handling of food  
  - Temperature abuse  
  - No access to clean potable water |
Food hygiene and safety practices

It is essential that food prepared is safe and hygienic for consumption. Essential food hygiene and safety practices have been briefly described below:

1. **Location and Surrounding:** The food premise should be located away from the sources of environmental contamination. If that is not possible then suitable measures must be adopted to protect food service establishments from the source of contamination.

2. **Layout:** The food preparation area, stores, service area, waste disposal area, employee facilities, etc. should be designed in such a way that food prepared is protected from contamination.

3. **Structures and Fittings** such as floors, walls, ceilings, doors and windows should be made of impervious, non-toxic, and easy to clean material. There should be no cracks or crevices, gaps and flaking of paints. Windows should be covered with mesh. There should be adequate lighting (shatter proof lights), ventilation in the food preparation area.

4. **Food Procurement and Storage:** Food should be procured from FSSAI licensed vendor. Food should be received at the right temperature - frozen foods should be at -18ºC while foods to be kept in refrigeration should be received chilled at temperatures below 5ºC. They should be stored in clean, food grade containers at the required temperatures. There should be adequate space, ventilation, lighting and temperature control facilities in the storage area. Food and non-food items, vegetarian and non-vegetarian food products should be segregated during storage.

5. **Food Preparation:** There should be separate food grade equipment for food preparation of vegetarian and non-vegetarian foods. There should be adequate supply of clean potable water for washing food and equipment and, for food preparation. Food should be thoroughly cooked/reheated above 75ºC (core temperature) before serving.

6. **Service and Display:** Clean, food grade utensils and cutlery should be used for food service and display. Hot food should be held at 60ºC or above while cold food should be held at 5ºC or below.

7. **Packaging and Transportation:** Food grade packaging material and containers should be used while food packaging and transportation. Transport or delivery vehicle should be clean and sanitized. It is preferable that food is held at adequate temperature i.e. hot food at 60ºC or above and cold food at 5ºC or below.

8. **Personal Hygiene:** Food handlers should go for annual medical check-ups and should be vaccinated for enteric diseases. They must maintain high level of hygiene standards which include bathing regularly, keeping hair, beard and nails trimmed, avoid wearing nail varnish, wear clean clothes/apron, cap and gloves (wherever necessary), wash hands after use of toilets, touching/scratching self, sneezing, coughing, etc. There should be adequate supply of hot and cold water, soap, clean towels and sanitizers. Food handlers should have separate changing area and toilets facilities.
9. **Cleaning and Maintenance**: The food premise (floors, drains, walls, fittings), equipment and cutlery should be thoroughly cleaned after use or end of food processing. There should be adequate facility for hot and cold potable water. The waste should also be disposed regularly from the food premise.

**Tools to ensure food safety**

Food safety can be ensured only when every stakeholder plays their respective role responsibly. For example, an FBO must be self-compliant and make available safe food for the consumers. At the same time, consumer should be aware about what to look for in an FBO and how to select safe food. Consumer organizations need to undertake drives to educate the consumer as well as FBOs about food hygiene and keeping the consumer safe.

FSSAI has devised three major initiatives, which can be used by the FBO and consumer as a powerful tool to ensure food safety. You were introduced to these in the previous chapter. Let us learn about these in greater detail.

**Hygiene rating**

It is an online, transparent rating process aimed at empowering consumers to make an informed choice when they eat out and encourage businesses to ensure hygiene standards.

It is a user-friendly, technology-driven scheme where food service establishments are given a score (between five to one) as per their hygiene and food safety compliance. The businesses can display that they are a Right Place to Eat through stickers and thus promote their business. The consumer can judge whether it is a safe place to eat by looking at the rating of the food service establishment.

Following steps are involved in obtaining a Hygiene Rating:

1. **Self-Assessment by FBO** – The FBO should log-in to Serve Safe Portal with (FLRS) Login ID and password. After the login, self-assess food safety compliance on parameters mentioned on the Hygiene Rating Checklist.

2. **Verification Process** – The FBO will have an option to choose from the empaneled Hygiene Rating Auditing Agency (HRAA)/ Food Safety Department, which will then visit and inspect the premises for food safety compliance. The Food Safety Officer (FSO)/Auditor will submit the report on Serve Safe Portal.

3. **Generation and Display of Hygiene Rating** – Once verification process is complete, FBO can download the Hygiene Rating Certificate and display where it is visible to the consumers.

4. **Overall monitoring by regulatory staff** – The regulatory staff from State or Central authority will be responsible to ensure that the Hygiene Rating of a food service establishment is done in an ethical manner.
Food safety training and certification

In terms of section 16(3) h of the Food Safety and Standards Act 2006, the Food Safety and Standards Authority of India (FSSAI) has to ensure training of persons who are or intend to become involved in food businesses, whether as food business operators or employees or otherwise. It is accordingly desired that -

a. All food businesses having central licences or state licenses should have at least one trained and certified food safety supervisor for every 25 food-handlers or part thereof on all their premises.

b. These supervisors should in turn carry out periodic onsite training of all food handlers, at least on quarterly basis and maintain record thereof for food safety audit and inspections.

c. Food handlers in all petty food businesses that are registered should be trained and certified.

Following training courses have been designed for the purpose –

**Level 1: Basic:** (5 Courses of 4 to 6 hours duration over 1 or 2 days) - (1) Street Food Vending, (2) Catering, (3) Manufacturing / Processing, (4) Storage & Transport, and (5) Retail & Distribution

**Level 2: Advanced:** (4 Courses of 8 hours duration over 1 or 2 days) - (1) Catering (2) Manufacturing / Processing, (3) Storage & Transport, and (4) Retail & Distribution


FoSTaC Plus: (2 Courses of 8 hours duration on 1 day or 2 days)- (1) Start-Ups, (2) Organic Food Business.

Additional training courses including customised courses could be introduced in due course as the need arises. Currently, courses are being offered on face to face mode, while this would be continued, but subject to availability of credible training partners, some of the courses could be allowed through online mode as well.

FSSAI has created training content for the above courses. The same is currently available in English and is being translated in Hindi and 10 regional languages.

FSSAI has taken on partners who are providing training. Training partners include -

1. Big food businesses (central licensees and big state licensees)
2. Academic and Vocational Institutions
3. National Skill Development Corporation (NSDC), Sector Skill Councils (SSCs) and State Skill Development Missions.
4. Training agencies approved under other government schemes
5. Industry Associations, Scientific and Technology Associations
6. Civil Society Organisations

It is desired that big food businesses, particularly all with central licenses and bigger ones with state licenses should take responsibility of training and certification of food safety supervisors and food handlers in their own premises and of the suppliers, distributors, retailers and transporters in their entire food value chain.

Each State/UT would identify resource persons, master trainers and trainers from food businesses, food technology, home science and nutrition colleges / universities, industry associations, consumer organisations and individual experts and professionals.

FSSAI has established the FoSTaC platform (available at https://fostac.fssai.gov.in/) to manage the entire food safety training and certification system.

**Consumer complaint handling**

Food Safety Connect is an initiative of FSSAI to develop a credible and robust information and feedback mechanism across various channels to create a responsive ecosystem to bring each citizen on-board to share their concerns regarding food safety violations.

This “Food Safety Connect” initiative allows a consumer to share their concerns, know their rights and track Food Business Operators license/registration certificate authenticity. The main objective of this initiative is to ensure satisfactory and timely redressal of concern and to create a robust ecosystem of ensuring food safety in the country.

If a consumer has a food concern/complaint and is looking for the right person to contact, the following steps need to be followed:

- **STEP 1:** Identify type of food and the problem observed
- **STEP 2:** Identify the recommended practices not followed under the premises
- **STEP 3:** Identify the Outlet or Product Brand Name and provide address of the Seller/Outlet of the product

Once all the details are provided, the concern will be shared with the nearest Food Safety Officer for further follow up.

Thus, in order to ensure safe food for consumers, food hygiene must be maintained at home as well as at all food service establishments. It is important to know how safe and good quality foods should be selected. It is also important to handle food safely and ensure safe disposal of waste. Lack of adequate infrastructure and knowledge of safe food handling practices among food service establishments, especially the small-scale food businesses and street food vendors, raises special concerns. Hygiene rating, training and certification of food handlers and safety supervisors, and a consumer connect mechanism are some of the initiatives introduced by the Food Regulatory Authority of India to improve the food safety scenario of the country.
Summary

- Unsafe food and poor diet create a vicious cycle of disease and malnutrition. All stakeholders of a food ecosystem need to be aware about keeping food safe.

- Food safety can be ensured at the household level by being mindful of personal hygiene, selection of right food, proper food handling and waste disposal.

- Food adulteration is a menace and one needs to be aware of the common adulterants added to our foods, foods which are likely to be adulterated and simple tests for detection of adulteration which can be done at the household level.

- Consumers need to look for certain features before buying different types of foods. Labels must be examined carefully for best before/expiry date, quality marks (ISI, AGMARK), storage instructions and ingredients.

- Once procured, foods also need to be processed, stored and handled with care to ensure that they stay safe. WHO has outlined five keys to keeping food safe – keep clean, separate raw and cooked foods, cook thoroughly, keep food at safe temperatures and use safe water and raw materials.

- It is important to segregate waste (wet, dry and recyclable waste) so that it can be sent further for appropriate disposal.

- With the mushrooming of large and small scale food service establishments including street food vending, there is a serious concern regarding safety of the food served.

- It is important to ensure that the location and infrastructure of the food preparation area is suitable. The kitchen layout and design should also ensure smooth flow of operations with minimum chances of contamination. Drainage and waste disposal facility should also be as per norms laid in the Food Safety Management System (FSMS) Guidance Documents.

- There should be separate food grade equipment for preparation of vegetarian and non-vegetarian foods. There should be an adequate supply of clean potable water for washing food and equipment and, for food preparation.

- Clean, food grade utensils and cutlery should be used for food service and display. Hot food should be held at 60°C or above while cold food should be held at 5°C or below.

- Cleaning and sanitization of premises and maintenance of good personal hygiene levels is also vital.

- Consumer organizations need to undertake drives to educate the consumer as well as FBOs about food hygiene and keeping the consumer safe.

- Hygiene ratings will help consumers make appropriate food choices.

- Food safety training and certification (FoSTaC) of FBOs will help in empowering the FBOs in serving safe food.
• Basic, Advanced and Special training courses are offered by FSSAI through Training Partners suitable for different kinds of FBOs.

• The consumer has been further empowered to raise grievances against FBOs who are selling unsafe food.

Key Words

• Ecosystem - the set of elements, living and non-living, that interact, over time, within a defined locale.

• FLRS: Food Licensing and Registration System, an online system to facilitate FBOs in India to apply for License/Registration certificate and for tracking their applications during processing.

• Food Safety Connect- an initiative of FSSAI to develop a credible and robust information and feedback mechanism and to bring each citizen on-board to share their concerns regarding food safety violations

• FoSTaC - Food Safety Training and Certification, a large-scale training and capacity building programme for food handlers

• HRAA - Hygiene Rating Auditing Agency

• Hygiene rating – an online, transparent rating process aimed at empowering consumers to make an informed choice when they eat out and encourage businesses to ensure hygiene standards.

Exercises

1. Explain why food safety education is important for both the consumers and FBOs.

2. Discuss the points to be kept in mind by individuals to ensure that they don’t become a source of contamination for food cooked at home (Hint: Maintain personal hygiene).

3. Describe how you will select safe and wholesome ingredients for cooking meals at home.

4. What are the five keys to keeping food safe? Discuss with reference to the guidelines given by WHO.

5. Why is waste segregation and proper disposal important?

6. What are the major concerns regarding food safety in the food service sector?

7. List some essential food hygiene and safety practices for FBOs.

8. Discuss some tools for ensuring supply of safe food by FBOs.
References


