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Popular Article

## Factors Affecting Food Safety and Security: The Present Scenario

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### Abstract

Food safety and security must require for public health, nutrition, and sustainable development. The sufficient and safe food ensure healthy people which in turns help in overall global development. Food safety and security is interconnected to each other; sufficient food should be available but it should be safe to consume. Several factors influence the food safety and security. Despite many efforts, we are still far from achieving food safety and security. India did a lot in food security under National Food Security Act, 2013, however, food safety and affordability of nutritious food are still a major concern. There is need to strengthen food production system to fulfil the demand of global population, development of surveillance and monitoring system to ensure food safety, and development of strict international laws and regulations to ensure access to sufficient and safe food for all. In addition, factors such as climate changes, rapid population growth, urbanization, etc. are major hurdle to achieving the food safety and security and need to be addressed.

**Keywords:** Food safety, Food security, Nutritious food, Food borne diseases

### Introduction

Term 'Food security' refers to all people must have physical and economical access to sufficient, safe, and nutritious food at all time. Food safety has four dimensions which include



food availability, food access, food utilization, and food stability. Term 'Food safety' refers to food that is free from biological, chemical, and physical hazards, which is safe for human consumption. Food safety and food security always go together because a food is truly secure only if it is available and safe to consume. According to a report by World Health Organization in the year 2024, one people out of every ten people in the world got infection due to consumption of unsafe food and around 420000 people die every year due consumption of unsafe food. It is estimated that consumption of contaminated food led to a loss of 110 billion U.S. dollars each year to low- and middle-income countries due to loss of productivity and treatment expenses. Reports from the World Bank show that global food insecurity is getting worse very quickly. There are more areas where people are hungry, and since 2020, acute food insecurity has risen by 20% because of conflict, instability, and climate shocks. The concept of food safety and food security are two important parts of public health and long-term growth that can't be separated. It is not enough having enough food, but it also necessary to be safe, healthy, and easy for everyone to access. The wastage and loss of food are also a major concern needs to be address. The food loss is more common in developing due to improper techniques for harvesting and storage. While food wastage is a common problem in developed countries due to high food availability, high purchasing ability, large portion of food, and consumer preference for preference for fresh food. Therefore, we need to strengthen food systems, improve hygiene and quality control, lower the risk of contamination, and deal with the root causes of hunger and instability.

### **Factors associated with food security**

Food security is significant because it ensures that all people have access to sufficient, safe, and nutritious food for healthy life. Without it, hunger, poor nutrition, and disease increase at both household and national levels. Dimensions of food security include food availability, food access, food utilization, and food stability.

- a) Food availability refers to whether enough food is produced, imported, stored, and supplied in a region. It depends on several factors such as agricultural production, availability of land, water, seeds, fertilizers, and technology, livestock and fisheries production, and availability of storage facility and transport systems.
- b) Food access refers to even when food is available, people must be able to obtain it. This depends on household income and poverty, food prices, employment opportunities, market access, and social inequality.



- c) Food utilization refers to food should not only be available but also properly used by the body. This depends on nutritional quality of food, safe drinking water, sanitation and hygiene, health status of individuals, and knowledge of balanced diets and food preparation
- d) Food stability refers to food security must be maintained over time, not just temporarily. It is affected by climate change, natural disasters such as floods and droughts, conflicts and war, economic crises and inflation, seasonal shortages and supply chain disruptions.

Recently, two more dimensions, agency and sustainability, are proposed by Clapp *et al.* (2022) to food security. The agency means ability of individual, families, and communities, especially those who are poor and marginalized people, can make decision and exercise control over their food systems. And, sustainability focuses on maintaining food system over the generation. Whereas, stability dimension of food security deals with short term factors such as disaster, price fluctuation, and conflicts and war.

#### **Factors associated with food safety**

Access to safe food is critical to promote healthy and prosperous life. The consumption of unsafe food, contaminated with bacteria, fungi, virus, parasites, or chemical, causes loss of life as result of diseases ranging from diarrhoea to cancer and economic burden globally. Major food contaminants posing threat to food safety and security includes:

- a. Biological contaminants such as bacteria, fungi, parasites, viruses, and fungal toxins are the most common causes of unsafe food.
- b. Chemical contaminants such as pesticide residues, veterinary drug residues, heavy metals, food additives in excess, and environmental contaminants.
- c. Physical contaminants such as glass, stones, plastic, metal fragment, and hair or dust
- d. Poor hygiene and sanitation such as unclean water, dirty utensils and equipment, poor personal hygiene of food handlers, unhygienic slaughtering, processing, or storage conditions.
- e. Improper storage and handling such as inadequate refrigeration, improper cooking, cross-contamination, poor packaging, long storage under unsuitable conditions.

#### **Present scenario at Global level**

Globally, food safety and food security remain to be major public health and development challenges. The second goal of the United Nations's 17 SDGs is to "End hunger, achieve food security and improved nutrition and promote sustainable agriculture" by 2030.



The present global situation shows only partial improvement. Hunger indicators have shown slight improvement; however, the world is still far away from achieving food safety and security. About 7.8-8.8% of world populations suffered from hunger in 2024 (SOFI report 2025). In the year 2024, about 2.3 billion people suffered from moderate or severe food insecurity and around more than 2.6 billion people were unable to afford a healthy diet. About 512 million people will face the risk of hunger by 2030, approximately 60% of which will be from Africa, showing that the world is not able to achieve SDG 2 by 2030.

The conflict-affected and climate-vulnerable regions are severely affected by acute food insecurity. The acute hunger is driven mainly by conflict, climate change, economic stress, and displacement. World Bank and world food programme (WFP) updates also show that food insecurity has worsened because of fragility, war, inflation, and repeated weather extremes, with many countries remaining in crisis conditions. Food price inflation is one of the main global pressures on food security. Since 2020, food price inflation has often remained above general inflation, reducing people's purchasing power and limiting access to nutritious foods. In January 2023, global food price inflation peaked at 13.6%, and in low-income countries it exceeded 30% at one stage. High prices push poor households toward cheaper but less nutritious foods and are associated with increased child wasting and severe wasting. The food safety situation is also alarming globally. Around 40% of children under five years of age suffering from the foodborne disease, with about 125,000 deaths each year. Therefore, stronger food systems, better surveillance, safer production and distribution, climate-resilient agriculture, and coordinated international action are essential to improve both food security and food safety worldwide.

### **Present scenario at India level**

In India, food security has improved in terms of coverage and access to subsidized foodgrains. Recent reports indicate that India has improved situation of undernourishment and inability to afford a healthy diet. At the same time, major nutrition problems still remain, especially child stunting, wasting, underweight, and anaemia. Under the provision of National Food Security Act (NFSA), 2013, India continues to provide foodgrains to over 800 million people. The NFSA legally covers up to 75% of the population of rural India and 50% of population of urban India, and currently around 80 crore people are covered for highly subsidized foodgrains. However, nutrition security is still a serious concern. The National Family Health Survey-5 (NFHS-5) conducted during 2019-2021 reported that 35.5% of children under 5 years are stunted, 19.3% are wasted, and 32.1% are underweight. According



to NFHS-5, 67% of children (which is higher than the NFHS-4 estimate of 59%) and 57% of women are anaemic in India.

Affordability to healthy diets is another major issue faced by India. According to SOFI 2025 reports, in India the cost of a healthy diet increased from purchasing power parity (PPP) \$2.77 per person per day in 2017 to PPP \$4.07 in 2024. It is estimated that around 42.9% of India's population was still unable to afford a healthy diet in 2024, which is equal to around 586.5 million people. India has strengthened food safety regulations and enforcement under Food Safety and Standards Authority of India (FSSAI), but food adulteration, contamination, unsafe street food, and uneven field-level enforcement remain ongoing challenges. Recent enforcement data also show the scale of the safety problem. In Financial year 2024–2025, 33,405 milk and milk product samples were analysed, 12,780 were found non-conforming. In India, several factors such as poor hygiene, unsafe street food, and weak sanitation practices continue to contribute to foodborne disease risk. India needs to work on beyond ensuring mere calorie access and focus on providing safe, affordable, balanced, and nutritious food for all.

### **Conclusion**

Food safety and food security remain one of the major global challenges with significant implications on public health and global development. Food safety and security are closely interconnected to each other, and influenced by several common factors such as poverty, lack of infrastructure, weak food laws and regulations, and poor surveillance and monitoring systems influence. In addition, climate change, rapid population growth, urbanization, conflicts, and the globalization of food trade also affect both food safety and food security by increasing pressure on food systems and creating new risks in food production, distribution, and consumption.

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