

Nutrition, Infection & Immunity: A Review

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Abstract

The immune system becomes vital once an individual is exposed to an infectious agent. However, the nature of infectious agents varies and so different approaches are required by the immune system to deal with different types of infectious agent. These different approaches follow similar general strategies, which aim to seek out and destroy, but the precise immune mechanisms involved can differ. Strength of immune system is guided or controlled by our food. So it's hundred million fact that quality of food affects our immunity. As we all know food is our basic need. Food acts like fuel so quality & selection of food items affects our mental, physical health & ultimately whole immunity. Each and every person wants to look smart & healthy, and then diet plays ultimately an important role for achieving this innocent goal. The key to an effective diet program is healthy eating, and which means healthy portions and proportions. Vegetable juices are highly recommended as part of our health promoting smart choices. You may add spices like ginger, black salt, chat masala as per your requirements. Clear soups and salads can be consumed in unlimited amounts as desired so that you are 3/4th full at the end of the meal. There are so many different diets are in practice for smart & healthy living, but it completely depends upon your's choices.

Introduction

In India malnutrition (under nutrition) is a national threat. Under nutrition/Undernourishment is known as a condition when almost all the nutrients are below the requirement. It may be defined as a state of partial starvation. A living organism is the product of nutrition. The human being requires more than 45 different nutrients for its well being. Deficiency of any nutrient affects health of an individual. The health of a person depends on the type and quality of food stuff his/her diet. Human nutrition is governed by many factors like: food habits and behavior (impart major role for maintaining hygiene and quality of food or diet), food beliefs, ethnic influences, geographic influences, religious and sociological factors, psychological factor, food production, income, national and international food policies, food technology, processing, transportation, marketing, educational status and other mass media facilities.

A very common notion about any diet program is the fact that there are too many do and don't with regards to eating the right food. You cannot eat too much white bread, and

you best skip on those fatty meats and head directly on to the lean but bland chicken. You cannot even have one measly scoop of the favorite chocolate chip mint frozen treats for desert. The list just continues and on, and it just ends along with you giving up the diet since you need to have nerves of steel to follow along with every single rule. The key to an effective diet program is healthy eating.

Are we nutritionally Secure?

Food Availability	Various reasons regarding Food Insecurity
Cereals	Socio- Economic factor Disaster prone area Lack of awareness Poor post Harvest Management Lack of Technological approach
Pulses	
Oil seeds	
Fruits & Vegetables	
Animal Products	
Honey production	
Mushroom production	
Sugarcane	

India will not be able to meet many of the developmental goals.

Yes, of course food security is necessary but not sufficient to ensure nutrition & to prevent malnutrition. It is a multi-faceted challenge which requires a multi-sectoral approach: like food systems & food technology. In our community infants, young children, pregnant & breastfeeding women are especially vulnerable to malnutrition. Nutrition interventions must focus on the critical 'First 1000 days' windows of opportunity. The immune system is always active **(1)**, carrying out surveillance, but its activity is enhanced if an individual becomes infected. This heightened activity is accompanied by an increased rate of metabolism, requiring energy sources, substrates for biosynthesis and regulatory molecules, which are all ultimately derived from the diet. Through experimental research and studies of people with deficiencies, a number of vitamins (A, B6, B12, folate, C, D and E) and trace elements (zinc, copper, selenium, iron) **(2)** have been demonstrated to have key roles in supporting the human immune system and reducing risk of infections. Other essential nutrients including other vitamins and trace elements, amino acids and fatty acids

are also important in this regard. All of nutrients named above have roles in supporting antibacterial and antiviral defenses but zinc and selenium seem to be particularly important for the latter.

Diagrammatic Presentation of Food Security & Food Insecurity

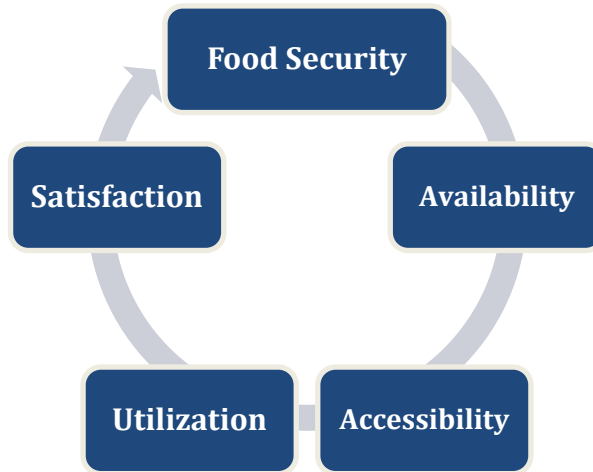


Diagram: 1

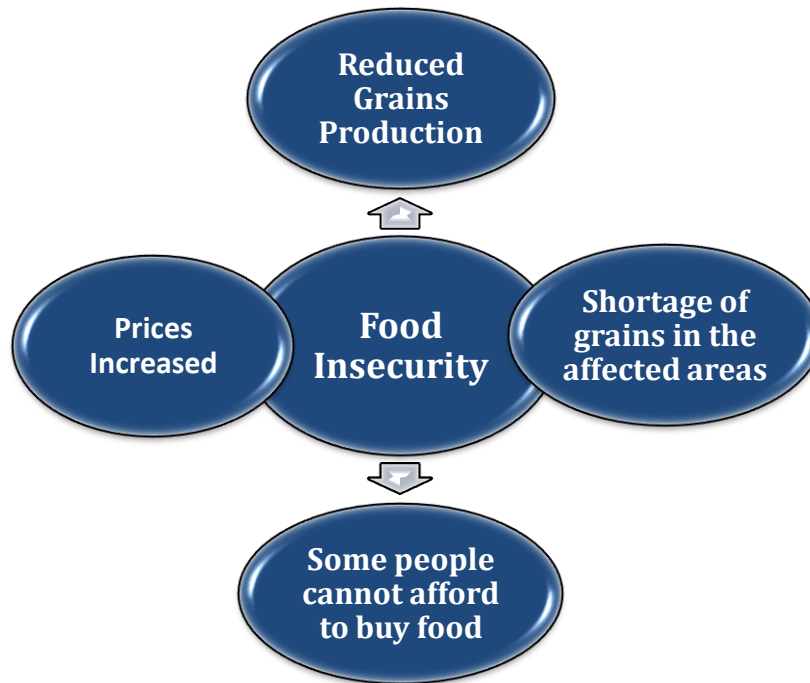
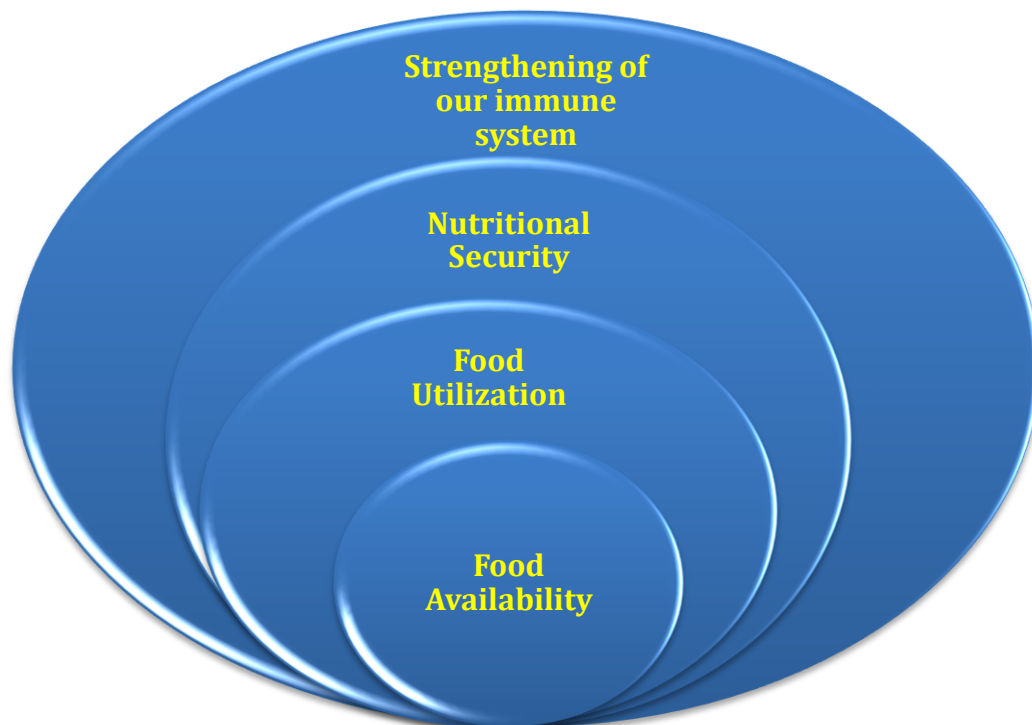


Diagram: 2

Above all representation clearly present that Food availability, nutritional security and our immunity are interlinked. Consumption of a diet of diverse and varied plant-based and animal-based foods that is consistent with current healthy eating guidelines would be best to support & strengthen our immune system.



Summary and conclusions

The immune system protects the host from pathogenic organisms (bacteria, viruses, fungi, parasites). To deal with such an array of threats, the human immune system has evolved to include a myriad of specialized cell types, communicating molecules and functional responses. The immune system is always active, carrying out surveillance, but its activity is enhanced if an individual becomes infected **(3)**. This heightened activity is accompanied by an increased rate of metabolism, requiring energy sources, substrates for biosynthesis and regulatory molecules, which are all ultimately derived from the diet. Through experimental research and studies of people with deficiencies, a number of vitamins (A, B6, B12, folate, C, D and E) and trace elements (zinc, copper, selenium, iron) have been demonstrated to have key roles in supporting the human immune system and

reducing risk of infections. Other essential nutrients including other vitamins and trace elements, amino acids and fatty acids are also important in this regard **(4)**. All of nutrients named above have roles in supporting antibacterial and antiviral defenses but zinc and selenium seem to be particularly important for the latter. It would seem prudent for individuals to consume sufficient amounts of essential nutrients to support their immune system to help them to deal with pathogens should they become infected **(5)**. Consumption of a diet of diverse and varied plant-based and animal-based foods that is consistent with current healthy eating guidelines would be best to support the immune system.

References

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