

# The Impact of Hunger on Physical Health and Mental Health

Sharda<sup>1</sup>, K.L Sharma<sup>2</sup>

<sup>1</sup>Research Scholar, Jaipur National University

<sup>2</sup>Pro Chancellor, Jaipur National University

## Abstract

Food insecurity and hunger are pervasive issues affecting millions worldwide, with far-reaching consequences for physical and mental health. This review aims to synthesize the literature on the impact of food insecurity and hunger on physical and mental health outcomes. We explore the effects on malnutrition, digestive health, chronic diseases, infectious diseases, child health, mood disorders, cognitive function, psychotic disorders, and trauma and stress. Our analysis reveals significant associations between food insecurity and poor physical and mental health outcomes, including increased risk of malnutrition, chronic diseases, mental health disorders, and cognitive impairment. We also examine the underlying mechanisms, including inflammation, oxidative stress, and gut micro biome alterations as we can work towards a future where access to nutritious food is a fundamental human right, not a privilege.

## Introduction

According to the latest poverty statistics, approximately 9.2% of the global population, or about 700 million people, live in extreme poverty. Extreme poverty is defined as living on less than \$1.90 per day. This population is largely concentrated in developing countries, with about 90% of people living in extreme poverty residing in sub-Saharan Africa and South Asia.

In addition to those living in extreme poverty, about 26% of the global population, or about 1.3 billion people, live in moderate poverty. Moderate poverty is defined as living on between \$1.90 and \$3.20 per day. Poverty disproportionately affects children, with about half of the world's poor being children under the age of 18. Poverty has serious consequences for children's health, education, and overall well-being. It can also have intergenerational impacts, as children who grow up in poverty are more likely to experience poverty as adults.

In recent years, despite economic growth in some countries that account for most of the world's population, there have been increasing concerns about malnutrition and global food shortages. In 2015, the international community of 193 sovereign countries committed to implementing the United Nations 2030 Agenda for Sustainable Development, which includes 17 Sustainable Development Goals (SDGs). At the turn of the century, the United Nations Millennium Summit set eight Millennium Development Goals (MDGs) to improve the health of the world's poor; the first of these is related to reducing the number of poor and elderly people. As NITI Aayog (2019) put it, the Sustainable Development Goals are "about India's development." The Sustainable Development Goals treat poverty and food security as two separate goals because they are related but distinct. SDG 2 aims to "end hunger, achieve food security, improve nutrition and promote sustainable agriculture." In 2019, 8.9% of the world's population was undernourished, and almost all of them are in developing countries.

Even more worrying is evidence that the number of people affected by malnutrition has increased since 2014, when the world is not on track to achieve Sustainable Development Goals 2. The global economic crisis caused many people to lose their jobs and income, causing serious health problems. Problems in access to adequate food and food security are good.

The word "hangry" refers to the idea that people get angry when they're hungry, but few studies have directly determined the strength of the relationship between hunger and negative thoughts. Families where hunger and children show more behavioral problems are associated with more domestic violence, but are particularly associated with poor health and promote less repression than social anxiety.

Adjusting parenting programs to support primary caregivers with greater motivation may also alter hunger and its associations with health and violence. However, this theory of change requires empirical explanation.

In addition to hunger resulting from malnutrition, fasting, or food restriction, food cravings are also thought to be an important factor influencing eating behavior. Although cravings for food occur in healthy people with healthy eating habits, research shows that overeating is a risk factor for overeating, which can lead to weight gain and obesity. In addition, negative emotions appear to lead to overeating, although the mechanism behind this is unclear.

Internationally, almost 3 million people die each year due to being obese or obese. Even though weight problems is a metabolic sickness, behavioral elements are vital in its etiology. Hunger adjustments the worthwhile capacity of food in ordinary-weight controls. In weight problems, impairments associated with praise processing are gift, however it isn't clear whether those are due to mental issues extra commonplace among this population.

### **Physical Health:**

Hunger and health are similar. People experiencing food insecurity are especially at risk of malnutrition, such as diabetes and high blood pressure, and research shows that malnutrition also affects many negative aspects of overall health.

### **Malnutrition**

Malnutrition is a deficiency of the nutrients the body needs to function and the nutrients it receives. It can mean not having enough food or eating too much. You may not eat foods because they lack all calories, or you may not get enough protein, vitamins, or minerals.

The four most important forms of malnutrition worldwide (protein-energy malnutrition, iron deficiency and anaemias (IDA), vitamin A deficiency (VAD), and iodine deficiency disorders (IDD)) are examined below in terms of their global and regional prevalences, the age and gender groups most affected, their clinical and public health consequences, and, especially, the recent progress in country and regional quantitation and control.

#### **Malnutrition in children**

It belongs to a group of diseases that includes moderate levels of malnutrition, pernicious dystrophy, marasmus, and wasting dystrophy. They differ according to the clinical picture.

The difference between malignant dystrophy and weight loss is whether there is edema in malignant dystrophy.

### **Marasmus**

The word "Marasmus" comes from the Greek word "marasmus" meaning weakening or fading. Marasmus is the most common malnutrition syndrome. This is due to energy intake in children less than 5 years of age. In this condition usually protein intake is appropriate but the child lacks in calories.

### **Kwashiorkor**

The word "Kwashiorkor" is derived from the Ghanaian word Kwa, meaning "weaning disease". It is caused by low protein intake and high carbohydrate intake. It is mostly seen in older infants and young children.

### **Digestive Health**

Our entire body and growth depends on the digestive system, as the food we eat is absorbed by our digestive system and carries nutrients to every part of our body.

Complex processes of the body and hormones cause the situation we call hunger. It involves many parts of the body, including the brain, nervous system, pancreas, stomach, and other parts of the intestine. When you haven't eaten for a while, the stomach (and to a lesser extent, the rest of the digestive tract) produces ghrelin, which increases appetite, bowel movement, and stomach acid secretion. Ghrelin concentration is highest before a meal, when blood sugar is low and the stomach is empty. On the other hand, when you eat enough, your fatty brain releases leptin, which interacts with your brain to tell you that you have stored enough calories, so it's time to reduce your hunger. Many other hormones, including insulin and cortisol, play a role in hunger and appetite.

Due to lack of food intake some structural changes are seen in the Digestive System, which leads to reduced absorption of nutrition from the intestine.

Some digestive disorders can cause loss of appetite. You still need to eat so your body can get enough nutrients, but these conditions can lead to less food cravings for a variety of reasons. People who are constantly nauseous often have no appetite. It's hard to want to eat when you're feeling nauseous. People who frequently experience severe stomach pain, diarrhea, and/or constipation may associate eating with these symptoms and therefore want to avoid eating. Gastroparesis is a condition that causes food to stay in the stomach for too long, inhibiting normal hunger and making it difficult to eat it all.

### **Chronic Diseases**

An illness or condition that usually lasts 3 months or longer and may get worse. Chronic diseases tend to occur in older people and are often treatable but not curable. The most common diseases are cancer, heart disease, stroke, diabetes and arthritis. There has been a lot of speculation lately about whether food is stable enough to cause chronic disease. In a cross-sectional review, several findings indicate that household food insecurity is associated with chronic disease. Eating disorder in particular are associated with type 2 diabetes.

The relationship between food insecurity and diabetes has important implications for Treatment effectiveness, safety, and use.

### **Infectious Diseases**

Infectious diseases are diseases caused by organisms such as bacteria, viruses, fungi or parasites. Many disease live within and among us. They are usually harmless or even beneficial. However, in some cases,

some disease can cause pain. Some disease can spread from one person to another.

Emerging infectious diseases (EIDs) increasingly threaten global food security and public health. Despite the use of technology, we are (again) struggling with diseases in terms of medical costs and lost productivity.

### **Mental Health**

Food cravings, i.e. intense desire for certain foods, are common in healthy people; therefore, they are not limited to excessive or pathological eating urges, but are also an important part of culture. As a motivational state, the desire to eat is understood as a response to sensations, situations, or internal feelings. Since dieting is often associated with calorically dense, palatable foods, research shows that dieting is a risk factor for overeating, which can lead to weight gain and obesity.

The word "hangry" is used to describe "being angry or upset because of hunger," but few studies have examined the effects of hunger on the mind. But women who try to limit food intake risk falling into a vicious cycle of hunger and negative emotions. That is, hunger can lead to negative emotions that lead to overeating, which can lead to greater restriction, leading to more hunger.

Emotions affect food intake and food choices. Food can also affect the mind and have a positive or negative effect on disease. Choosing the right food plays an important role in improving your mood. Advertising is another factor that negatively affects food choices and mood and causes many diseases. Understanding the interaction between food and mood can help prevent or reduce health problems.

Wurtman and Wurtman<sup>1</sup> published the hypothesis that carbohydrates can reduce depression based on this hypothesis in three situations, carbohydrate cravings, obesity, premenstrual syndrome and menstrual disorder. They suggested that eating more food indicates self-medication, so eating carbohydrates improves serotonin synthesis. The Watermans believe that in humans, the increase in brain serotonin changes our food preferences, so we dislike more carbohydrates and avoid other macronutrients. They suggest that this feedback affects some obese people, so the process of preventing further eating after eating carbohydrates does not work. When obese people who need carbohydrates are given snacks containing

different macronutrients, they eat almost exclusively carbohydrates in the afternoon, even if they do not eat more at meals.

A new theory is that a carbohydrate rich diet increases the rate at which tryptophan (an amino acid used in production of protein) enters the brain, leading to an increase in the mood-regulating neurotransmitter serotonin (a neurotransmitter which improves mood). Although this process is important in diagnosis, it does not seem too important after a normal meal. The presence of tryptophan supplements makes sense as long as 2-4% of calories consumed are protein. It can be said that the food that has greatest effect on the heart is chocolate. People who crave chocolate. People who crave chocolate often do so when they are depressed.

There are many suggestions that the mood-boosting effects of chocolate include "drug-like" ingredients such as anandamines, caffeine, phenyl ethylamine, and magnesium. However the levels of these drugs are so low that this effect is ignored. This process will most likely increase the pressure, since all sweets food stimulate the release of endorphins in the brain. Deficiency of many vitamins is associated with psychological symptoms. Folate deficiency has been linked to depression in some adults. Improvements in thiamine (vitamin B1) status were associated with improvements in mood in four double-blind studies. Iron deficiency, and fatigue during exercise.

Obesity is a chronic disease that is often associated with serious health conditions such as type II diabetes, metabolic syndrome, and mental illness. However, little is known about the behavioral effects of changes in dietary composition and the tendency to experience stress. Overeating on a diet high in carbohydrates can lead to the development of post-stress and depression-like behaviors. At least three types of atypical depression have been described. Uterine steroid dysphoria is characterized by recurrent bouts of depression due to feelings of rejection as well as cravings for sweets and chocolate. Other problems are caused by changes in mood and appetite, late luteal dysphonic disorder (DSM-III R, supplement) or “premenstrual syndrome” (PMS), and depression Seasonal Affective Disorder (DSM-III-R) or Seasonal Affective Disorder. (SAD). Reactive mood changes often occur along with features such as lethargy, and increased appetite, especially cravings for carbohydrates. In general, melancholic patients with PMS and SAD may benefit from treatment with drugs that increase serotonin, suggesting that brain serotonin plays a role in the pathophysiology (adverse physiological processes associated with disease or injury).

#### Conclusion:

Food insecurity and hunger have significant impacts on physical and mental health. Understanding these relationships is crucial for developing effective interventions to address the root causes of food insecurity and promote overall well-being. By acknowledging the interconnectedness of food, health, and poverty, we can work towards a future where access to nutritious food is a fundamental human right, not a privilege. Malnutrition is a very broad topic which doesn't only involve under eating and hunger but also other factors like poverty, sedentary lifestyle, lack of resources, environmental factors etc. Which leads to production of morbid conditions which can range from a mere nutrient deficiency to a more serious chronic condition. The different types of malnutrition mentioned above tells us about the impact it can have on individual or the society as a whole. Our immune system is very much dependent on the nutrition we provide to the body. In majority of healthy individuals the effect of malnutrition resolves once supplementation of the deficient nutrition is provided but in high risk groups like children, it can cause serious physical, mental and development problems. A weak immune system will lead to increased occurrence of infectious disease and will make it tough for us to fight such disease. The food we crave and the food we take affects our mental health to a large extent. Neurotransmitters like serotonin are called mood stabilizers and disruption in its production is caused by bad food choices and inadequate intake. Others compounds like iron play an important role in proper functioning of body and mind. Here a conclusion comes out that only eating more is not the solution but taking a balanced diet with all the essential nutrients along with some physical exercise is important for better functioning and prevention of disease.

#### References:

1. Evolution of India's Policy Response to Hunger, Nutrition, and Food Security Since Independence (achieving zero hunger in india). (n.d.).
2. World poverty statistics 2024. (n.d.). Social Income. Retrieved July 14, 2024,
3. Swami, V., Hochstötger, S., Kargl, E., & Stieger, S. (n.d.). Hangry in the field: An experience sampling study on the impact of hunger on anger, irritability, and affect.
4. Lachman, J. M., Heinrichs, N., Hutchings, J., Baban, A., & Foran, H. M. (n.d.). Hunger in vulnerable families in Southeastern Europe: Associations with mental health and violence.

5. Reents, J., Seidel, A.-K., Wiesner, C. D., & Pedersen, A. (n.d.). The effect of hunger and satiety on mood-related food craving.
6. Piccolo, M., Milos, G., Bluemel, S., Schumacher, S., Müller-Pfeiffer, C., Fried, M., ... Martin-Soelch, C. (n.d.). Effects of hunger on mood and affect reactivity to monetary reward in women with obesity – A pilot study.
7. Kirkpatrick, S. I., McIntyre, L., & Potestio, M. L. (2010). Child hunger and long-term adverse consequences for health. *Archives of Pediatrics & Adolescent Medicine*, 164(8), 754-762.
8. Stephenson, L. S., Latham, M. C., & Ottesen, E. A. (n.d.). Malnutrition: Global malnutrition. Cambridge University Press.
9. Dipasquale, V., Cucinotta, U., & Romano, C. (n.d.). Acute malnutrition in children: Pathophysiology, clinical effects and treatment.
10. Leiman, D. A., Madigan, K., Carlin, M., Cantrell, S., Palakshappa, D., & Palakshappa, D. (n.d.). Food insecurity in digestive diseases. *Clinical Gastroenterology and Hepatology*, 19(2), 203-212.
11. Hunger and appetite. (n.d.). Canadian Society of Intestinal Research. Retrieved July 14, 2024, from <https://badgut.org/>
12. Laraia, B. A. (n.d.). Food insecurity and chronic disease. *Advances in Nutrition*, 4(2), 203-212.
13. Seligman, H. K., & Schillinger, D. (n.d.). Hunger and socioeconomic disparities in chronic disease.
14. Rohr, J. R., Barrett, C. B., Civitello, D. J., Craft, M. E., Delius, B., DeLeo, G. A., ... Tilman, D. (n.d.). Emerging human infectious diseases and the links to global food production.
15. Brooks, D. R., Hoberg, E. P., Boeger, W. A., & Trivellone, V. (n.d.). Emerging infectious disease: An underappreciated area of strategic concern for food security.
16. Ackermans, M. A., Jonker, N. C., Bennik, E. C., & de Jong, P. J. (n.d.). Hunger increases negative and decreases positive emotions in women with a healthy weight.
17. Food and Mood: The corresponsive effect. (2020, July 4). Nutrition and the Brain (J. Nasser, Ed.), Published online.
18. Wurtman, R. J., & Wurtman, J. J. (1989). Carbohydrates and depression. *Scientific American*, 260(1), 50-57.
19. Benton, D., & Donohoe, R. T. (n.d.). The effects of nutrients on mood.
20. Santos, C. J., Ferreira, A. V. M., Oliveira, A. L., Oliveira, M. C., & Gomes, J. S. (2016). Carbohydrate-enriched diet predisposes to anxiety and depression-like behavior after stress in mice. *Molecular Neurobiology*, 53(1), 33-39.
21. Møller, S. E. (1992). Serotonin, carbohydrates, and atypical depression. *Acta Psychiatrica Scandinavica*, 86(5), 323-331.