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# Food Security in India: State Policies, Implementation and Impact

Wibier, Tanja

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# Food Security in India:

## State Policies, Implementation and Impact

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Tanja Wibier

S2514516

[t.wibier@umail.leidenuniv.nl](mailto:t.wibier@umail.leidenuniv.nl)

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### Introduction

Achieving worldwide food security is a goal many countries and organisations work on together. The Sustainable Development Goals fight for zero hunger, as did the Millennium Development Goals more than two decades ago. Worldwide there were in 2021 around 828 million suffering from malnutrition (World Health Organization: WHO 2022). So, food security problem is still present. The COVID-19 pandemic also played an essential role in this number. During the pandemic, people lost their jobs, and countries went into lockdown, slowing down the markets and much more. Food security has not only to do with the question 'does someone have food?' but also the questions 'has someone the correct nutritious food?', 'can someone absorb that food most efficiently?', 'does someone live in a healthy environment?' and so on. COVID-19 challenged these questions even more. India is one of these countries struggling to achieve food security nationwide. India has been fighting this battle for a long time and has made fascinating developmental steps. It is interesting to see how a country like India, which will soon be the biggest country in the world population-wise, is the fifth world economy (Ministry of Finance Government of India 2023) and became the office of the world a long time ago, is struggling with food insecurity, and is working very hard to solve these problems, especially now that the world is slowly getting back on track before the COVID-19 pandemic standstill.

### Literature Review

There has been quite some research about food security in India. Nevertheless, even when there is much research, more is always needed. In my research, I will primarily focus on the different forms of food security and the government's initiatives and programs to achieve food security. The world has experienced a COVID-19 pandemic in the last two years with lockdowns and other restrictions. This pandemic has influenced many things, and also the situation of food security. In my research, I want to find out how this COVID-19 pandemic influenced food security in India and how this can be seen in urban centres. I have reviewed a few articles to show that this research will fit the research field. I will divide this review into two different sections. In the first section, I will review articles more focused on the food security debate in India. There will be more focus on food security in urban and rural

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areas. In the second part, I will be more focused on the COVID-19 situation and its effects on food security in India.

Mahapatra and Mahanty give an unambiguous definition: Food security "exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life" (Mahapatra and Mahanty 2018). This research uses this definition to grasp the concept of food security better. Besides, the authors also give a clear historical overview of the different food security plans implemented by the Indian government and also thoroughly discuss the problems relating of those programs; e.g., transportation, distribution, storage, etc. All these explanations are helpful to understand with clarity the way the Indian government deals with food security. Moreover, this paper argues why it is important to adopt different approaches in different contexts.

P. S. Brahmanand, A. Kumar, S. Ghosh, S. Roy Chowdhury, R. B. Singandhupe, R. Singh, P. Nanda, H. Chakraborty, S. K. Srivastava and M. S. Behera (Brahmanand et.al 2013) focus on the difficulties of gaining and preserving food security. They explain that gaining and preserving food security is threatened by multiple different perspectives. The examples they give are climate change, the changes in water demand, and so on. For India specifically, they explain how natural hazards like floods and droughts challenge food security.

Upadhyay and Palanivel clearly explain the dangers of experiencing food insecurity, how this can lead to health issues and how this in the future can impact the Indian economy. Here is also explained how food insecurity happens, explicitly focusing on the urban areas. The main argument they make is about the growing slums and their bad hygiene in combination with the rural-urban migration (Upadhyay and Palanivel 2011). This argument is an argument many make when talking about the reasons for food insecurity in India. This will also be a vital argument I will investigate further in this paper.

Another argument many researchers mention is the impact of climate change (Ahmad, Alam, and Haseen 2011; George and McKay 2019). This argument is often placed in a more future perspective, but one should keep it in mind due to the significant direct and indirect impacts. India does work on integrating the Sustainable Development Goals (SDGs) into its policies. However, as many other countries, due to experiences during the pandemic, integrating these goals has slowed down a bit.

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Over the years, India has fought malnutrition and food insecurity with many different schemes and policies. Chadha gives an overview of a few of these government initiatives, where they are implemented and how they are supposed to help. For my research, even though these initiatives are already in place, food insecurity is still a battle in India, especially in urban areas (Chadha 2016).

After reviewing these articles, I see a gap in why food insecurity is present in urban centres and how this form of food insecurity is different from rural food insecurity. Moreover, during the last three years, another factor has been in the battle towards food security and ending malnutrition; the COVID-19 pandemic brought extra struggles to the food security debate. Hence, there is a need to review a few literatures which relate COVID-19 and food security. Veena Suresh, Ram Fishman, Johanna Sophie von Lieres and Bhavani R. Rao focus on food security from the perspective of rural women in India (Suresh et al 2022). They collected information by setting out a telephone survey of 1319 women.

Their research shows how the lockdown had influenced food security. One of the reasons they gave talked about changes in income. They also briefly touch on the government initiatives for food security in rural areas. Overall, it is exciting research to gain a better understanding of the impact of the lockdown on India in this article, specifically the rural areas.

Singh, Kumar and Jyoti show how the change in food security in India fits in with the global trend of the COVID-19 pandemic impacting food security (Singh et al 2022). They explained how the pandemic and the lockdown impacted the agricultural sector, for example, by fewer workers or financial insecurities, eventually leading to food market problems and growing food insecurity.

Dipa Sinha goes even further by researching the changes in diet during the lockdowns. She explains how this diet change has to do with different aspects of food security, like accessibility and availability (Sinha 2021). She also researches on a few different government initiatives, the number of people these initiatives cover, and who is excluded from these initiatives. This is interesting to understand how the initiatives operate and why food security is still present in India.

A review of literature indicates that there is already a lot of research available about food security in India and different government initiatives to deal with food insecurity as a whole,

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specifically for urban areas and specific for rural areas. However, food insecurity is still existing in India. This is a puzzle which my research will address to fill the gap and raising questions which still need answers.

### Research Question

*'Why is food security so vital to both rural and urban India and how does the state address to this question and what are the outcomes?'*

To answer this question comprehensively, I will raise the following sub-questions:

What are the risks of experiencing food insecurity and who is affected?

How is the question of food security between urban and rural India different and how does the state address these two segments differently?

How does the state intervene in framing and implementing to achieve food security and what are the challenges?

How has the COVID-19 pandemic impacted the food security in India?

### Methodology

The methodology of this research is mainly historical and analytical; it is both quantitative as well as qualitative. The quantitative data used in this thesis mainly comes from government surveys and reports and research reports published by international and national organisations. This limits the research in a way that this data often only includes cases of people who are seen by medical facilities or written down in governmental documents, this is not the case for all people, people who do not have the needs to get this help are not accounted for in these reports.

For the qualitative research part, I have analysed multiple secondary academic sources to understand the concept of food security and governmental initiatives in India to fight food insecurity over an extended time line. Besides that, I have focused on academic literature on the influence of COVID-19 on food security in India. To support and expand the information I found in academic sources, I have focussed on different reports and releases by government departments and international and national non-governmental organisations which have dedicated their work to fighting food insecurity. I have analysed and compared the

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information found in these sources with each other to gain a better perspective of the situation in India.

Besides the limitations of the source materials, this is the best way to answer the research question in this research because of the limited time and possibility of doing my own field research. The sources give a pretty detailed view of the circumstances so that connections between situations can be made to understand more about the overall situation.

### Lay out

In this research, food security in India will be the central point. I will be looking into how food security is defined, linked to environmental and social aspects and how the risks of food insecurity impact people's life. The definition of food security will be used to eventually answer why food security is vital in India by sketching out the general situation of food security in India and the differences between urban and rural India.

In the first chapter, I will define food security and the risks of food insecurity in a more general sense. In the second chapter, I zoom in on India: 'What is the situation in India?' In this chapter, there is a clear division between urban and rural areas and the interdependence between the two areas. The third chapter focuses on the initiatives taken by the government. What kind of steps has the Indian government taken, and what was the impact of these initiatives? The fourth chapter is a case study of the situation in India during the COVID-19 pandemic. Here I will research how the pandemic has influenced the food insecurity in India. The interdependence will become even more evident in this chapter due to the reverse migration.



## Chapter 1 Conceptualizing Food Security

In this chapter, I will define food (in)security by looking into the different aspects of food security and the risk of suffering from food insecurity. Here I make a distinction between adults and children suffering from food insecurity.

### Food Security and Food Insecurity

The World Food Summit in 1996 came up with the definition that food security is reached "when all people, at all times, have physical and economic access to sufficient and safe nutritious food that meets their dietary needs and food preferences for an active and healthy life" (World Bank Group 2022).

Food security is often divided into four different categories. These categories are physical availability, economic and physical access, food utilisation and stability. To experience food security, one needs to experience all four categories.

#### *Food availability and Economic and physical access*

Food availability concerns production (Singh, Kumar, and Jyoti 2022, 96), and is based on the supply of food (World Bank Group 2022). You can divide the supply side of food into two categories, the amount of food produced in the country - domestic food production- and the food import (Mahadevan and Suardi 2013, 59).

The economic and physical access to food has to do with an adequate food supply. This means there is enough food at national or international levels to feed the people. However, this does not mean that there is food security at the household level. This has to do with people not having the suitable finances to buy food or are physically not in the area of the food (World Bank Group 2022). This means that even though the food is available nationwide, people still experience food insecurity.

There are two ways to measure physical access to food. The first aspect is the amount of imported food as a proportion of domestic food production (Suryanarayana 1997). Imported food must come from somewhere else, making it less accessible. The second aspect is the per capita available food grain (Suryanarayana 1997). Here, one can measure if there is literally enough food available for the number of people in the country. If there is not, or the

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number is low, people have to put more effort into getting the food, making the physical access terrible.

The economic access to food can be measured by the amount of income needed to buy a unit of food per capita, the increases in the income and the current prices of the food items (Suryanarayana 1997).

### *Food utilisation*

Food utilisation is another dimension of food security (Kumar et al. 2012, 445). Food utilisation has to do with the nutritious value of food and how the body uses these nutrients optimally. So, food utilisation has to do with the kind of diet people have, if the food is of good nutritional value, and the environmental circumstances. A body needs to be healthy and well cared for to be able to utilise food in the most optimal way (World Bank Group 2022). Factors that play a role are sanitary hygiene, environmental conditions and diet knowledge (Mahadevan and Suardi 2013, 59). How food is handled, prepared, and distributed between household members also impacts nutritional status (World Bank Group 2022).

### *Food Stability*

Food stability has to do with access to the other three aspects of food security over time. Food insecurity is not dissolved if someone has adequate access to food for one day, and the next day the situation is terrible again. Food security is reached with adequate access over time (World Bank Group 2022).

Food insecurity can be categorised into the aspects:

- Hunger
- Malnutrition

In the case of hunger, we talk about the feeling of hunger and its associated pain. It is a form of deprivation of food. The FAO (Food and Agriculture Organisation of the United Nations) describes, "all hungry people are food insecure, but not all food insecure people are hungry" (EC - FAO Food Security Programme 2008).

Malnutrition has to do with deficiencies. Somebody can have enough access to a quantity of food, but not the correct quality. When you do not eat enough (micro-)nutrients, you still

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experience food insecurity, even if you eat three meals daily. Malnutrition can also be connected to non-food aspects; insufficient healthcare, unclean sanitation and harmful environments play a role in malnutrition (EC - FAO Food Security Programme 2008). Often you see that hunger has to do with acute problems, while malnutrition is a more chronic phenomenon.

### Risks of Food Insecurity

Food insecurity can impact someone's life in multiple aspects, not only in the case of someone's health but also in their future in participating in society. The health risks of experiencing food insecurity are endless.

The effects of food insecurity vary from male to female and adult to child. It is essential to make the shift between adults and children in understanding the future perspectives of individuals to have suffered from food insecurity.

### Adults

The United States Department of Agriculture researched the effects of food insecurity. They concluded that food insecurity's effects are physically and mentally visible (Wageningen University and Research (WUR) n.d.). The research concluded that an even worse diet, an insufficient sleep pattern, a decrease in physical activity, and a more significant risk of diabetes are all consequences of food insecurity.

Malnutrition influences the function of the body's system. People suffering from malnutrition often deal with decreased muscle function; in the organ muscles as well (Saunders and Smith 2010). The decreased muscle function means that people's strength is impacted, making it harder to do certain physical activities. People working more physically demanding jobs will experience a loss in work performance (Prakash Upadhyay and Palanivel 2011, 31).

A decrease in the mass of the heart muscles will lead to a decrease in cardiac output. This will impact the blood flow and organs (Saunders and Smith 2010). When the muscles from the respiratory system are affected, it will become more difficult to cough. This creates a situation in which people are more affected by respiratory infections.

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People who suffer from malnutrition often experience Gastrointestinal (GI) problems. One of the most common is diarrhoea (Saunders and Smith 2010). Diarrhoea is also one of the reasons that many people who experience malnutrition die, because diarrhoea can lead to dehydration.

Malnutrition also affects the immune system. The body will have difficulties fighting infections and other diseases. This makes people more vulnerable to dangerous viruses. As well as, when they contract the infection or virus, it is significantly more difficult for the body to fight and heal (Bapen 2018).

Food insecurity also impacts mental health. Depression, anxiety and other mental problems are often linked to food insecurity (PROOF 2022). The problem with mental health problems is that these problems often create a vicious circle, and so the problem continues.

Malnutrition is a significant risk for women and girls of reproductive age. When a woman is pregnant, she has to share the nutrients in her body with her growing baby. If this is while experiencing malnutrition the mother and baby will not be getting the right amount of nutrients. Malnourished women often experience many complications during their pregnancy, and the nutrition deficiency the baby experiences during pregnancy will impact its future enormously (Unicef 2023).

Food insecurity is thus a condition that can lead to many problems, even outside the scope of hunger and having limited energy.

### Children

For Children, food insecurity is a significant risk. The first 1000 days (from conception until the second birthday) (De Onis and Branca 2016) of a child's life are crucial for its future. If a child experiences malnutrition in the first 1000 days of life, there is a considerable risk of stunting and wasting. Both these conditions will impair the child for life.

### *Stunting*

Stunting begins in utero, and continues for the first 1000 days of life (Prendergast and Humphrey 2014).

Stunting is the term used to describe a condition in which children do not grow in length in the way the linear growth is calculated. Stunting often involves irreversible physical and cognitive damage (De Onis and Branca 2016, 12). A child is stunted when their height is

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under the internationally agreed indicator of -2 SDs of the WHO Child Growth Standards for children of the same age and sex. Children are categorised as severely stunted when their height is below the mark of -3 SDs (De Onis and Branca 2016, 13). This means the child is 2 or 3 levels below their expected high range.

To diagnose stunting, it is crucial to measure the children often and to compare this data with the WHO growth standards. However, this is not always done sometimes in healthcare programs (De Onis and Branca 2016, 14).

Stunting affects a child's development because it affects their cognitive abilities long-term. This means that later in life, the child will be in a disadvantaged position to participate in education and later on the job market (Prendergast and Humphrey 2014, 250).

Stunting is often a generation cycle; women who experienced stunting themselves often have stunted children. Because stunting has such an influence on the economic status of the person, people who are stunted experience poverty, which means they have less access to food, which will lead to children being stunted (Prendergast and Humphrey 2014, 251).

Long-term consequences of stunting are health-related and impact the person's economic situation. Adults are often shorter; they have a minor body mass and a lesser education, often leading to a smaller income. These are all examples of the long-term consequences of childhood stunting (Dewey and Begum 2011, 8)

### *Wasting*

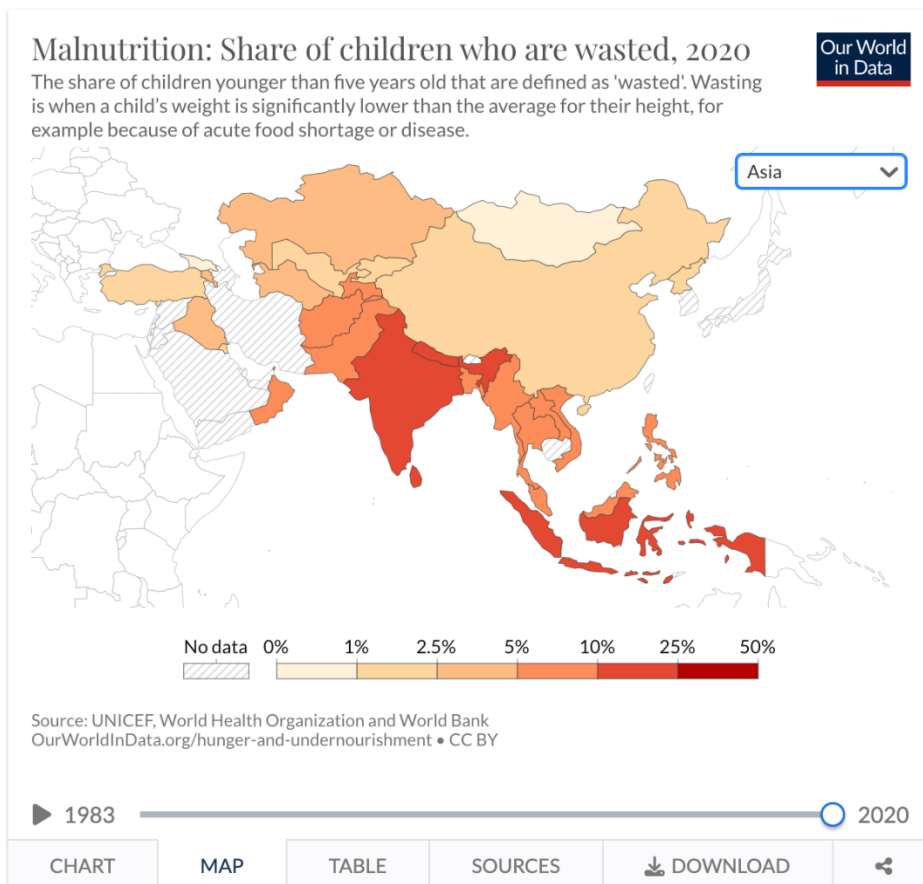
Wasting is used for children with a low weight for their height (World Health Organisation (WHO) n.d.b).

Wasting is often caused by a period of food shortage or a quick loss in weight due to infectious diseases, like diarrhoea, or in a situation where the body cannot absorb the nutrients correctly; this is often also linked to diseases. However, some children are persistently wasted (Richard et al. 2023, 1291).

The WHO also has internationally agreed-upon standards for children's weight, as they have for height. A child is defined as wasted when they are two levels under their expected weight range (Ritchie 2022).

As the image (image 1) below shows India experienced high levels of wasting.

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(Image 1: World Development Indicators - World Bank et al., *Malnutrition: Share of Children Who Are Wasted, 2020*, February 6, 2022, *Our World in Data*, February 6, 2022, Accessed April 2, 2023 <https://ourworldindata.org/wasting-definition>.)

Food security is a concept that exists not only out of having physical access to food but also of many environmental factors about absorbing and utilising food. People who suffer from food insecurity are exposed to many different risks. These risks differ if the person is in a different stage of life. The risks a child experiences have much different and more long-term consequences than the risk an adult is exposed to. This shows that fighting food insecurity is an uphill battle but an important one for the future of so many people.

## Chapter 2 Mapping Food Security in India

This chapter focuses on the situation in India. I will look at the general food insecurity situation in India before specifying the situation to an overview of rural and urban situations. By mapping food security, it becomes clear that there is a strong link between food security and environmental and social aspects, such as sanitation, education and employment, in India. By exploring these connections, it becomes visible that a diverse solution is needed to solve the food insecurity situation. Through mapping the food insecurity in India, one can see that there is a concept of interdependence between the food security of the urban centres and the rural areas in India.

### The Context

Over the last decades, India has experienced many changes. It has experienced rapid economic growth, urbanisation, population growth, etc. In 2022 India became one of the fastest-growing economies in the world (World Bank n.d.); at the beginning of 2023, India was on the course to becoming the biggest country in the world population-wise (Guardian Staff Reporter 2023). This would make India also the biggest democracy in the world. All these changes and titles are something India can be proud of, but how did all these changes impact food security in the country?

Food security and ending hunger has been a topic on the international agenda for many years. It was the first goal of the UN 2000 Millennium Development Goals (MDGs) agenda. This goal stated that we must cut the extreme poverty rate by half since 1990 to end poverty and hunger (United Nations [UN Department of Public Information] 2023). The UN agenda's 2015 Sustainable Development Goals (SDGs) has an individual goal to end Hunger, SDG 2. India has accepted both agendas, saying India is working hard to end hunger among its citizens (Maitra 2017).

Currently, India has not reached the goal of ending hunger, and not all citizens are experiencing food security. In 2020 India was the home of 200 million people suffering from undernourishment (Suri and Ray 2021). The problem of India's food insecurity is not because of limited access to food due to too little production, but because it has to do with distributing the food over the whole country and reaching the people who need it the most (Narayanan 2015, 199). India is fully self-reliant on food grains (Mahapatra and Mahanty

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2018). According to the Indian Council of Medical Research, food grain production in India is enough to feed the whole population. They stress that the availability of food grains per capita has declined due to population growth. However, there is still enough. The Council states that an individual needs 420 grams of food grains per day. From 2011-2013, approximately 471,6 grams per capita was available in India (Shakeel 2017). Over the years, the population growth rate has slowed, so the high growth rate can no longer be blamed for food insecurity (Narayanan 2015). This shows that the problem of food security is not located in the production of food grain but in other aspects of food security.

Different organisations have researched the food insecurity situation in India. In 2022 India was ranked 107th out of 121 on the Global Hunger Index. India had a score of 29.1. This means that the Hunger level in India is classified as severe. In 2022 16.3% of the population experienced undernourishment, according to the Global Hunger Index (Global Hunger Index (GHI) n.d.). This score is even worse than the score in 2014, which was 28.2. The World Food Programme (WFP) states that in 2022 a quarter of the undernourished people worldwide live in India (World Food Programme 2023a); this is an alarming number.

In 2018 the Indian government published a strategy for New India @75. In this strategy, the government writes that malnutrition among children and mothers is one of the preventable reasons for most diseases that citizens experience. The report states that 40% of deaths among children under five are due to undernutrition (Government of India 2018).

Besides undernutrition, there is also an increase in overnutrition. The data from the National Family Health Survey (NFHS) 4, the survey of 2015-2016, shows that around 20% of Indian adults experience obesity or overweight (Government of India 2018, 163).

The strategy report states that the quality and the amount of food are not the leading causes of food insecurity in India. The report says that causes can be linked to social and economic factors. It gives examples of women's literacy, lack of access to clean drinking water, and sanitation (Government of India 2018, 163).

There have also been changes in a positive way around India's food security problem. In 2012 the World Health Organisation (WHO) created six global nutrition targets to achieve by 2025. The goals are the following (World Health Organisation (WHO) 2014):"

- Achieve a 40% reduction in the number of children under-5 who are stunted;
- Achieve a 50% reduction of anaemia in women of reproductive age;
- Achieve a 30% reduction in low birth weight;



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- Ensure that there is no increase in childhood overweight;
- Increase the rate of exclusive breastfeeding in the first six months up to at least 50%;
- Reduce and maintain childhood wasting to less than 5%."

The reduction rate of children experiencing stunting continues in such a way that India will reach the goal as planned (Suri and Ray 2021).

There have also been some positive changes between the last two NFHSs (NFHS-4 2015-2016 and NFHS-5 2019-2021). In 2015-2016, 9.6% of the children 6-23 months of age received an adequate diet; in 2019-2021, 11.3% received an adequate diet. An adequate diet in this source is defined as a "Breastfed child receiving four or more food groups and a minimum meal frequency, non-breastfed children with a minimum of 3 Infant and Young Child Feeding Practices (fed with other milk or milk products at least twice a day for breastfed infants 6-8 months and at least three times a day for breastfed children 9-23 months, and solid or semi-solid foods from at least four food groups, not including the milk or milk products food group" (Ministry of Health and Family Welfare Government of India n.d.). This shows a slight increase in children receiving an adequate diet.

This survey also shows that there is a slight decrease in women with a Body Mass Index (BMI) below the standard ( $BMI < 18.5 \text{ kg/m}^2$ ), as well as in the percentage of men with a BMI below the normal (Ministry of Health and Family Welfare Government of India n.d.).

Diet is an essential aspect of food insecurity in India. The WFP reports that India's per capita income has tripled. However, dietary intake has decreased (World Food Programme 2023b). According to the EAT-Lancet Commission, the characteristics of a good diet are poor in India. The Indian diet does not reach the recommended targets of the food groups except for whole grains. The Indian diet misses some essential aspects for development, growth and preventing non-communicable diseases. Examples of these missing nutrients are fruits, vegetables, nuts, fish and dairy products (Suri and Ray 2021). Many Indian people cannot afford to create a diet following these guidelines (Suresh et al. 2022, 3).

Children often also experience malnutrition due to gaps in their diet. UNICEF already reported this in 2006. They stated that certain missing nutrients, for example protein, in the child's diet is one of the reasons for childhood malnutrition (Murarkar et al. 2020).

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### Rural India

India has a sizeable rural population; in 2021, there was an estimated 909 million people (World Bank Open Data n.d.b), approximately 65% of the total population of India (World Bank Open Data n.d.c). In rural areas, the reasons for food insecurity are different than in urban areas, and food security generally has a different look in rural areas.

In rural areas, we see food insecurity by children mainly because of these reasons, limited availability of food and the lack of knowledge about diet and food security among mothers (Ganesh 2022, 20).

The main difference in food security in urban and rural areas is the difference in access to seasonal grains, fruits and vegetables. When harvest season is here, there are a lot of seasonal products available in rural areas, which means their prices are lower (Murarkar et al. 2020). This change in the availability of food with the seasons has an essential impact on the calorie intake and the diet of the rural population (Sibhatu and Qaim 2017, 2-3). When harvesting season ends, these products are no longer available, and food insecurity will rise again.

### Maternal and Child Healthcare

In rural areas, infant mortality rates are higher than in urban areas. In 2001-2005 the infant mortality rate in urban areas was 42 deaths in 1000 births, while in rural areas, it was 62 deaths in 1000 births. Malnutrition is among the most important reasons (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 20). There is also a high number of women experiencing anaemia. The NFHS 3 (2005-2006) shows that 58% of women aged 14-49 suffer from anaemia (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 20).

Determining child malnutrition in rural areas is challenging because not all children are weighed after birth (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 25). This means the necessary data to determine if a child is suffering from wasting or stunting is unavailable. This has to do with a flawed healthcare system for mothers and children.

Research has shown that in areas with a high population suffering from anaemia, other diseases like HIV/Aids, malaria and tuberculosis are also more likely to be found (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 28). All these diseases have an enormous impact on the immune system. When people suffer from these diseases, their

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food utilisation will be down. Even when they have enough access to food, they still suffer from malnutrition because they cannot get all the nutrients.

Experiencing anaemia often means that the woman does not have enough nutrition and does not utilise all the nutrients in the food. This can lead to women being underweight. A woman with a low BMI has a higher risk of her child being underweight. The lower the BMI, the lower the child's birth weight (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 38). A low birth weight will, in the future, have numerous effects on the child.

To escape their situation, many rural people move to urban centres hoping to improve their situation.

## Sanitation

Good sanitation plays a crucial role in reaching food security because poor sanitation brings a lot of health risks and problems along. Sanitation means, among things, access to toilet facilities and clean drinking water. Access to suitable toilet facilities is often very poor or non-existent in rural areas. The census of 2001 showed that 78% of the Indian rural population did not have access to toilet facilities (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 20). When toilet facilities are poor, waterborne diseases can quickly spread. Two of the best-known diseases that impact food security and are often linked to lousy sanitation are diarrhoea and malaria (Narayan, John, and Ramadas 2019, 6).

According to the 2001 census, 73% of the rural population can access clean drinking water (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 21). Water is considered safe to drink when it is free of biological contamination of diseases such as worms, cholera, typhoid, etc. Clean water also has to be free of chemical contamination. Free of chemical contamination means that it does not contain excess fluoride, brackishness (a mixture of fresh and saltwater), iron, arsenic, nitrate, and other chemicals (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 27). Besides access to clean drinking water and toilet facilities is being able to wash your hands correctly also crucial for food security. This has to do with bringing diseases and bacteria to your food or into your mouth using dirty hands, this shows that the available clean water is not only for drinking but also for washing your hands.

## Food Security in India

### Employment and Education

Income and education are two essential aspects of reaching food security in both urban and rural areas. Income is quite a logical step; when someone has more to spend, they can afford to buy more food and different kinds of food, creating a better diet and becoming more food secure (Suresh et al. 2022). Thus, it is more challenging for people experiencing poverty to reach food security (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 11)

In the rural areas, we also see a growth of unemployment and a rise of employment in the informal sector; this impacts food security because of the instability of income, threatening the availability of the needs for a good livelihood (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 19). The Indian government has created different programs in rural areas to ensure better employment. These programs often offer employees a steady income to ensure they can buy necessary products. One of the best-known of these programs is the MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 19).

Education creates more productivity in rural areas; more productivity means more income and food security. Besides, productivity efficiency will also rise when the educational status is higher (De Muro and Burchi 2007); this helps food security because when production becomes more efficient, costs will go down, profits will rise, and so will income.

Thus, in rural areas, food access is tied to employment with a proper wage or the ownership of assets that can produce earnings; the problem is that access to food does not mean food security (M S Swaminathan Research Foundation (MSSRF) et al. 2008, 19). The gain food security, absorption of food is essential; this is something which in rural areas can be challenging because of the unsanitary environment.

### Urban India

#### Urbanisation

*Urbanisation* is when people from rural areas move to urban areas, often thinking that urban centres have more opportunities. In India, urbanisation is mainly present in the younger generation (Ganesh 2022, 20). However important to note is that when people urbanise, they do not automatically move out of poverty; poverty moves along with them, and there is a relocation of the problem, not a solution.

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Urbanisation and rapid urban population growth impact food security in Indian urban centres significantly (M S Swaminathan Research Foundation (MSSRF) et al. 2010, 21). This has to do with different components and consequences of urbanisation. Urbanisation is a process which has been going on for many years. Over the period 1980-2000, the urban population in South Asia more than doubled. Urbanisation is not the only factor in this rapid growth; a lower mortality rate in cities also plays a role (Hamayun and Lunven 1987).

Urbanisation leads to the unplanned growth of cities, often in slum areas (M S Swaminathan Research Foundation (MSSRF) et al. 2010, XI). The more people there are living in the slums, the worse the amenities get. People must share limited access with more people; more people also mean more waste. All this leads to a decline in the environment in urban centres and, thus, a strain on food security.

Urbanisation also brings some practical consequences along. The growing urban population has to live somewhere, more prominent land areas became occupied to build all these houses. Land that in earlier stages was used for different practices, like agriculture (Hamayun and Lunven 1987). When urban housing takes over agricultural land, this also influences agricultural productivity and lowers the food supply.

Another practical consequence is the rising need for fuel wood in a specific area. To supply this demand, deforestation happens. Here the situation is created, to supply the demand, more woods have to be cut down; this means the supply of fuel wood will shrink, prices will rise, and the urban poor will struggle to pay for fuel wood (Hamayun and Lunven 1987), and because of this, their budget for food will be relocated to buying fuel wood, limiting their access to food.

Access to water is also an issue with urbanisation. When people move from rural areas to urban centres, the water demand is relocated; this also means a water availability shift (Brahmanand et al. 2013). Rural citizens can have access to water because of a local water source; when they move to the city, there is a chance that they will not have access to water because of the area's high demand. This growing urban water demand creates competition between the centres and the surrounding rural areas (Hamayun and Lunven 1987). Due to the need for water in agriculture and the shift of water demand towards the urban centres, the water supply will be stressed, especially with the rising temperatures due to climate changes. Another problem with water is water pollution. Water is often polluted with waste from the urban centres or waste created by agriculture. The movement of this water makes

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that more extensive area experience an unsanitary environment (Hamayun and Lunven 1987, 3).

Urbanisation often comes with a change in diet, not only for adults but also for infants. Infants in poorer urban areas are often breastfed less than in other areas. This happens because mothers have to work to help provide for the family; when a mother is working, she cannot always breastfeed her baby, and so the baby's nutritional welfare will suffer. Children who are not breastfed are bottle-fed. The problem is that the knowledge about hygiene and dietary needs necessary to bottle feed is often missing. Infants will be at more risk of disease, because of the lack of knowledge and nutritional values of breastfeeding (Hamayun and Lunven 1987, 3).

For adults, diets often change as well. In urban areas, there is a different availability of kinds of food than in rural areas. Sometimes it means a more varied diet; the demand in urban centres for vegetables, fruit, livestock products and so on is higher than in the rural areas (Hamayun and Lunven 1987, 3). However, in urban areas, there are also options available with less nutrients. Processed foods, alcohol and soft drinks become part of an urban diet, especially in the middle- and higher-income classes (Hamayun and Lunven 1987, 4). The problem is that a diet based on these products does not guarantee food security.

Unfortunately, the opposite is true, one may not experience hunger anymore, but one can still be malnourished; obesity and overweight are still symptoms of people experiencing food insecurity.

When these people move to the urban centres, their situation will not automatically be better. In urban centres, they experience a whole new set of reasons for food insecurity. India in 2021 had an urban population of around 498 million people (World Bank Open Data n.d.d), this around 35% (World Bank Open Data n.d.e) of the total population. Because of this fast size, it is interesting to see how these urban centres have developed, and for this paper, it is interesting to see the food security status of these urban citizens.

Urban food security is generally higher than food security in rural areas. However, there is a big difference in food security between the different groups in the urban centres. The differences can be so significant that some urban groups are even worse than rural citizens (Anand et al. 2019). Urban food security is also vastly different from rural food security. Urban food security has to do with factors like employment, housing, food prices, lack of

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access to specific infrastructures, changes in diet, healthcare, etc. In this part, I will examine a few of these points.

### Employment

The ability to buy food is one of the most critical aspects of food security in urban India. Very short, if you do not have the money to buy food, there will be no food. So employment is a significant way to increase food security in urban areas. This phenomenon is quite visible in India; in areas with a lower employment rate, there is a higher rate of people having less access to food (M S Swaminathan Research Foundation (MSSRF) et al. 2010). This also concerns that urban people must buy all their food; if food prices rise, they must spend more. This connects the urban poor and food insecurity (Maitra 2017).

There are also different levels within the connection between employment and food security. In urban Indian centres, there is a division between the formal, informal, and unemployed sectors. The informal sector or the unorganised workers can be defined as workers that do not have social security provided by an employer (M S Swaminathan Research Foundation (MSSRF) et al. 2010, 21). The MSSRF (M.S. Swaminathan Research Foundation) states in their 2010 report that one can assume that a formal sector employee has more access to food, mainly because in unorganised jobs or the informal sector income is often low and irregular (M S Swaminathan Research Foundation (MSSRF) et al. 2010, 21).

### Slums

As mentioned earlier in this research, food security does not only have to do with having the money and access to buy food. In India, around 49% of the urban population lived in slums in 2020 (World Bank Open Data n.d.a). In multiple international reports like the MDGs, the complications around slums and food security have been recognised (M S Swaminathan Research Foundation (MSSRF) et al. 2010, 5).

Slums are often linked with being low-income areas, having lousy access to infrastructures like clean water, healthcare, drainage and good shelter, and being highly populated. All these points create an environment in which diseases can snowball and spread quickly, creating, besides the limited access, the problem of diminished utilisation and absorption of nutrition, with, as a consequence, malnutrition.

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The poor sanitation situation in Indian slums leads to water and sanitation diseases, leading to, for example, diarrhoea among young children (M S Swaminathan Research Foundation (MSSRF) et al. 2010, 14). This situation is even worse in unrecognised slums; these slums have even fewer amenities (M S Swaminathan Research Foundation (MSSRF) et al. 2010, 14) and, thus, an even worse environment for food security. So, one can make the connection of diminished food security due to a lack of access to a clean environment with slums. As said in urban food security, there are more vulnerable groups. Slum dwellers are part of these more vulnerable groups due to the slum environment, and infants and mothers in this category are even more vulnerable than other slum dwellers.

### Future Prospects

Over the years, there will be many aspects that will influence food security in urban centres. About the changes due to governmental interference, I will talk later. There will be some aspects that can influence food security in urban centres in a negative way if not dealt with properly.

Climate change will impact food security in multiple ways. The rising temperatures will impact agriculture in the way that productivity will diminish (Ahmad, Alam, and Haseen 2011). Rising temperatures often come with droughts, which means there will be a higher water demand, stressing the water supply even more.

Pollution is another aspect that, in the future, can impact food security. The urbanisation of people towards slum areas where sanitation is poor will lead to a higher form of pollution. When pollution increases, the environment will become worse and unhealthier; in this way, food security will be impacted negatively.

Only a little has been researched about these possibilities. However, these aspects play an essential role in the future of India's food security.

Achieving food security is still an ongoing process in India. As mentioned before, the problem is not the limited access to food, but the distribution of food and environmental aspects. India has enough food to feed its entire population. However, the struggle is still present. It is clear that in urban areas, the quick urbanisation rate plays an important role. Cities are bursting at the seams with the number of people moving to urban areas. Enormous slums are created in which employment and sanitation are low. These two factors are vital for food security and thus create the current food insecurity situation. In rural areas,



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employment and sanitation also play an essential role in food insecurity, but here also, education and health care have a significant presence in the reasons for food insecurity. This chapter also shows the interdependence between food insecurity in rural areas and food insecurity in urban areas. When people in rural areas experience food insecurity, they migrate to urban areas in the hope of bettering their situation. However, because of this migration, the utilities in urban areas need to be shared with more people, making the situation in urban areas even worse. With the worsening of the urban situation, food insecurity also rises. Here a shift of the problem from rural towards urban is happening, but because of this shift, the situations in urban areas worsen. So, the situation in rural areas impacts the urban situation.

### Chapter 3 State Interventions: Policies, Implementation and Impact

This chapter focuses on the state initiatives to fight food insecurity are central. There will be a division between general initiatives and initiatives focusing on child and mother welfare.

The Indian government has a long history of creating programs and policies to fight malnutrition in the country and make India's food secure. In 1950 the government thought food security could be reached by controlling population growth. This was because they had seen that with the rising population and the declining availability of food, people started to experience food insecurity. So in 1950, they launched a program in their five-year plan to control the population (Shakeel 2017, 83). When the government saw this was not working as expected and India was still experiencing food insecurity, they launched the green revolution in 1960 (Shakeel 2017, 83). A green revolution focuses on developing agricultural production and creating higher productivity; food grain production rose significantly (Shakeel 2017, 83). The green revolution worked, but food security was not yet reached. In 1996 the Indian government signed the 1996 Rome Declaration of the World Food Summit. In this declaration, the government declares that it will create access to food for its citizens (Shakeel 2017, 90).

Even though the Indian constitution does not have a right to food, there is Act 21, which writes that there is a right to life (Government of India 2022). According to the Indian government, you can interpret this as the right to a dignified life. To have a dignified life, a person must have food, which can be seen as the right to food (Department of Food and Public Distribution Government of India 2013).

Thus the Indian government has a long history of fighting malnutrition and is still fighting this battle with many different programs targeting different aspects of food security and different audiences. Some of the biggest will be researched below.

#### Public Distribution System

The Public Distribution System (PDS) is a system that gives food to people for a subsidised price (Mahadevan and Suardi 2013, 62). The PDS is a system created by the British after the Second World War and the 1943 Bengal Famine. This system was created to target urban centres and regions that experience food shortages (Mahapatra and Mahanty 2018, 194). It tries to create food security on a household level (Chadha 2016, 80).

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Within the PDS, the Indian government buys food grains from Indian farmers for an agreed-upon price around the harvest season. Then it distributes this around the different states to create availability for the consumer. These food grains are then sold to the consumer for a subsidised price to keep food available (Kumar et al. 2012, 445).

In 1997 the PDS changed into the Targeted Public Distribution System (TPDS). From that time, the TPDS focusses on households living below the poverty lines (BPL households). The TPDS makes a classification by looking into a household's income compared to the country's total income. Then a household can be classified as BPL or APL (Above Poverty Line). This did not go as expected because people who owned luxury goods, like cars, TVs and fans, were classified as APL (George and McKay 2019, 8). However, owning these goods does not make a person food secure. This classification and the indications made alongside are one of the problems of the PDS. The idea was that people get a ration card when classified as BLP. With this card, they could go to specific shops, Fair Price Shops, to buy the products for subsidised pricing. These ration cards brought much administrative work and cost, and corruption was also easily possible (Mahadevan and Suardi 2013, 64).

Some other problems noted with the TPDS are that it did not focus on creating more production but only on the relocation of grains and that the quality of grains was so low that people did not buy them (Ganesh 2022, 19). One can conclude from this that the amount of food may have been available for the people experiencing food insecurity. However, the quality of the products lets people decide against buying the food and fall back into the vicious circle of food insecurity.

In 2013 the TPDS was integrated into the NFSA (National Food Security Act). The act talks about having 75% of the rural and 50% of the urban population on the receiving end of subsidised food grains (Department of Food and Public Distribution Government of India 2013). In this act, a whole chapter, chapter V, is dedicated to the reforms of the TPDS. These reforms are about bettering delivery of food grains, information and communication, transparency and more (Ministry of Law and Justice Government of India and Singh 2013, 5). The TPDS does receive some critique over the years. The critiques often concern the leakage and waste of food grains. Reports have shown that India's poverty is decreasing; however, there is a slight rise in people getting rationing cards (Mishra and Maheshwari 2021, 3-4). These two things contradict each other, showing mismanagement and maybe even corruption with the ration cards. Having people use ration cards when they do not require it

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creates a problem for the supply side; more grains need to be bought for the subsidised price, denying farmers more profit. On the demand side, you see that the food grains need to be shared with more people; thus, people get a smaller portion of the total amount. Another form of leakage is the disappearance of food grains before it reaches the people in need; investigations show that fraud within the TPDS happens 80% before the food grains reach the recipient (Mishra and Maheshwari 2021, 4).

Storage and transportation are areas in which much wastage happens. Food grains are harvested during a specific season, but demand is the whole year round, so the food needs to be stored; however, storage is limited (Tanksale and Jha 2017, 175). When the food grains cannot be stored in the warehouses, an open place close to the warehouse is chosen for storage (Tanksale and Jha 2017, 177). Here the grains are exposed to the weather, often leading to wastage. In transportation, wastage happens because the grains must be moved over a long stretch of land (Tanksale and Jha 2017, 175). During transportation, the grains are also exposed to climate changes; because of this, the grains will degrade, and some will become unsuitable for consumption.

The TPDS is one of the most significant food security initiatives for India. Over time it has been in use; it has seen many different reforms and has helped many people. However, some challenges still need to be addressed to make the TPDS more sufficient in helping the people in need the most.

### National Food Security Act

On September 10 2013, the Indian government launched the National Food Security Act (NFSA) (Narayan, John, and Ramadas 2019, 9). This act is integrated nationwide (Ministry of Law and Justice Government of India and Singh 2013). The act states that it is "An Act to provide for food and nutritional security in human life cycle approach, by ensuring access to adequate quantity of quality food at affordable prices to people to live a life with dignity and for matters connected therewith or incidental thereto." (Ministry of Law and Justice Government of India and Singh 2013).

This act covers around two third of the Indian citizens and ensures that the central and state governments share food security responsibilities. The NFSA became the umbrella for food security programs by the Indian government, and thus the act focuses on different aspects; in the section, there is a focus on the mother's food security. A section of the act ensures

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that pregnant and lactating mothers, up to six months after birth have access to free meals and a benefit is provided (Puri, Levering Agriculture for Nutrition in South Asia (LANSA), and M S Swaminathan Research Foundation (MSSRF) 2017, 8). Section 6 of the NFSA focuses more on child food security. In this section, the MidDayMealScheme is implemented (Puri, Levering Agriculture for Nutrition in South Asia (LANSA), and M S Swaminathan Research Foundation (MSSRF) 2017, 8).

One of the best-known aspects of the NFSA is the changes to the TPDS. Section 12 of the NFSA states the reforms implemented to the TPDS. Examples of these reforms are (Puri, Levering Agriculture for Nutrition in South Asia (LANSA), and M S Swaminathan Research Foundation (MSSRF) 2017, 10):

- The digitalisation of the TPDS to make the system work more efficiently
- Changes in delivery
- A shift of management from private players to the social sector
- Introducing new programs involves transferring cash and coupons instead of using a ration card.

The NFSA ensures that a universal group can access the right amount of food (Krishnan and Subramaniam 2014, 113). To create a situation where all people can access food, the Indian government decided that under the NFSA since 2013, until further notice, the prices of food grains under the TPDS are Rs. 3 per kg for rice, Rs. 2 per kg for wheat and Rs. 1 per kg for coarse grains (Ministry of Consumer Affairs, Food and Public Distribution Government of India and Department of Food and Public Distribution 2023). By stating these prices in the act, the government ensures stability in food prices and long-term economic access to food.

### Programmes

The Indian government has started many different programs to feed mothers and children. However, three of the best working and still available programs have been mentioned below. Even though these programs may have been started before the NFSA, they are now part of the NFSA.

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### Integrated Child Development Services

An extensive program of the Indian government to fight malnutrition is the Integrated Child Development Services Scheme (ICDS). This scheme was introduced in 1975. The focus lies on children in the age group 0-6 years, pregnant women and lactating mothers (Ministry of Women and Child Development Government of India n.d.). ICDS is an umbrella term for multiple programs (Ministry of Women and Child Development Government of India 2015). Programs under the ICDS are about nutrition, preschool non-formal education, health and other aspects of malnutrition (Ministry of Women and Child Development Government of India n.d.). The funding of this program is a cooperation between the Indian government and UNICEF. According to New India @75 Strategy, the ICDS focuses on the first 1000 days of a child's life, mainly because brain growth happens within these 1000 days. Malnutrition will have significant consequences on this brain growth and so on the future of the child (Government of India 2018, 147). This strategy mainly talks about two big schemes in the ICDS-the MiddayMealScheme and Anganwadi Centres.

### MidDayMealScheme

The MiddayMealScheme (MDM) is a national government scheme supporting primary school nutrition. This scheme has two objectives: one focuses on nutrition, and two enhances school enrolment and attendance (Narayan, John, and Ramadas 2019, 8-9). The rules as of 2015 of this scheme state that children aged 6-14 who are enrolled and attend the school will receive a nutritious meal on every school day free of charge (Ministry of Human Resource Development Government of India and Prasad 2015). The government has created guidelines for meal preparation to ensure they conform to the standards in line with the scheme (Ministry of Human Resource Development Government of India and Prasad 2015). Besides guidelines about cooking the food, the Indian government 2016 revised the scheme and created guidelines which state that an MDM Meal should provide 450 calories and 12 grams of protein to the student (Department of School Education and Literacy Government of India 2019).

### Anganwadi Centres

Anganwadi Centres are more focused on the healthcare side of malnutrition. These centres focus on the health status of pregnant women and lactating mothers. Anganwadi Centres

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provide education, immunisation, nutrition, health check-ups and referral services (Ministry of Women and Child Development Government of India 2015). The centres focus on providing essential healthcare services and are thus part of the Indian public healthcare system (Akshaya Patra n.d.). As of June 2018, India has 13.63 lakhs operational Anganwadi centres; this is around 1.3 million centres (Press Information Bureau Government of India and Ministry of Women and Child Development 2018). Under the NFSA, the Angagwadi centres are responsible for providing free meals and benefits of at least 6000 INR to mothers up to six months after birth (MT 55,8).

The Indian government has been working hard to fight food insecurity with the different initiatives they have implemented. These initiatives have developed over time to fit the needs of the Indian people better. These initiatives target different levels of Indian society and focus on fighting food insecurity. In this way, the initiatives can be more effective in the fight against national food insecurity.

### Chapter 4 Food (In)Security During the COVID-19 Pandemic

During the COVID-19 pandemic, many changes happened, and all impacted the food security in India. In this chapter, the consequences of the COVID-19 pandemic will be analysed, and the government's actions to fight food insecurity during the pandemic will be highlighted.

The COVID-19 Pandemic brought many difficulties all over the world. Countries placed under lockdowns, hospitals staff crumbling under pressure, businesses closing, people losing their jobs and many other situations nobody could predict. India also suffered from the consequences of the pandemic. As of May 3 2023, India counts, since the beginning of the pandemic, January 3 2020, more than 44.9 million cases of COVID-19 (World Health Organisation (WHO) n.d.a). Looking at the size of the population, this is less than 4%. Of course, one should remember that not every case is documented due to limited testing. Nevertheless, how did the Indian government contain the cases, and what was the impact of these measures on food security in India?

India entered a strict lockdown from March 25, 2020, till May 31, 2020. This lockdown disrupted many processes in the country. Many of these disrupted processes impacted the food security of the Indian population. The person's income level played an essential role in their ability to deal with the situation under the lockdown. Research showed that people living in the higher classes until the upper lower class experienced less disruption of their diet and thus their food security (Aneesh and Patil 2021) under the lockdown than people living on a daily wage (Kang et al. 2021).

#### Rural vs. Urban

There was a difference between the reasons for suffering and the amount of suffering of food insecurity during the pandemic between rural and urban areas in India. A survey conducted by Kang et al. is shown that in the urban areas, people were more vulnerable to the loss of jobs and the reduction of income than people living in rural India. This survey showed that people in urban areas also spend less on food during the lockdowns than people in rural areas (Kang et al. 2021, 4). So, India's urban population got the double burden of reduced income or the loss of income and rising food prices (Narayanan and Saha 2021, 3). This double burden will have significantly impacted the food security of certain urban citizens.



The reason for the difference in the number of people losing their job in urban and rural areas, as presented in the survey by Kang et al. (2021), is probably because of the number of daily wage workers in the urban areas in the informal sector (Narayanan and Saha 2021, 9). Urban citizens may have been in a more difficult situation during the lockdown. However, after the lockdown, they could return easier to their jobs (Padmaja et al. 2022, 5).

### Migrant Workers and Daily Wage Workers

Migrant workers and people working for a daily wage can be seen as two groups hit hardest during the lockdown. For both, it was challenging to work because the country came to a standstill, so there were few jobs for day workers. However, for migrant workers, it was more difficult because they could not return home quickly (Aneesh and Patil 2021, 685). As soon as these day-wage workers lost their jobs, their income came to a standstill, and often these people also did not have bank accounts with much savings available (Kang et al. 2021, 9). This meant they experienced a great dilemma, dying from malnutrition or the consequences of the pandemic (Narayanan and Saha 2021, 1).

During the pandemic, it was clear that people's purchasing power was down and that their diet suffered under it. When people have less money, they will think about everything and how to spend it wisely. Then you see that people decide to spend their money on less luxury products. So, during the pandemic, there was a visible rise in the consumption of cheaper grains like rice and wheat. At the same time, consuming food like fruit, vegetables, and animal products declined (Suresh et al. 2022, 494).

Markets often depended on the labour of migrant workers, but with migrant workers leaving the urban centres in an attempt to return home, these markets stopped (Narayanan and Saha 2021, 1). This meant it took more work for the local citizens to buy food; they had to travel long distances. This all impacted the accessibility of food.

Besides the loss of income and access to food, the lockdown also meant that all non-essential facilities were closed. Schools and other childcare facilities were closed (Maurya and Yadav 2022, 19). Schools and these facilities were often big players in providing healthy, nutritious food to children. By closing these facilities, the nutrition of children was challenged.

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### Supply Chain

Besides the change of income for many people, the pressure on the supply chain also was also a reason for a challenged food security moment. The supply chain was under pressure because of changes in demand, the lack of labour and disruptions in transportation (Suresh et al. 2022, 4). The worker shortage led to crop failure (Suresh et al. 2022, 2). This can be explained because of the following situations. The lockdown was enforced around the harvest period in India; this meant an extra high demand for labourers to help out. Nevertheless, because of the lockdown and the travel restrictions, it was difficult for these workers to get to the fields and help in the harvest. On March 27, the Indian government decided to give the agricultural sector a bit of leeway in the lockdown to help with the harvesting. However, many farmers still decided not to harvest their crops. This was due to the low prices they would receive for their crops. Restaurants and other big demanders were closed due to the lockdown; this created such a drop in prices that it was more expensive for a farmer to harvest crops than to let them rot in the fields (Summerton 2020, 334). However, this situation does create another problem. The amount of supply does reduce, because of these decisions making the available crops even more expensive. So, the accessibility of food for the poorer citizens became even less.

### Government Help

The government created plans to help the poorest people in India via the PDS (Aneesh and Patil 2021, 385–86).

Under the Pradhan Mantri Garib Kalyan Yojana (PMGKY), the government tried to help people with a ration card under the NFSA to access food for free. People would get an additional 5 kg of grains and 1 kg of pulses per household (Sinha 2021, 324). This program was handed out once a month for three months (Ministry of Finance Government of India 2020). This program helped out in many more ways than providing food to the poor. The biggest problem with this plan was that not all people suffering from food insecurity have a ration card under the NFSA. Some people have cards handed out by the state, and some do not have any registration (Sinha 2021, 324). This meant that many people were left out under this plan.

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To help more, the government decided to roll out the Atmanirbhar package from June to July 2020. This package helped migrant workers without a ration card to receive 5 kg of grains and 1 kg of dal for free (Sinha 2021, 324). However, this addition was not yet the complete solution by the Indian government. In March 2021, the Indian government started the initiative One Nation One Ration Card (ONOC). This initiative offers migrant workers the possibility to pick up the rations they are entitled to at the place they are working while their family can pick up their part at their home (Ministry of Consumer Affairs, Food & Public Distribution, Government of India 2021). This plan had already been put in motion before the pandemic; however, the last steps helped out during the pandemic.

For child malnutrition, the decision by the supreme court was an important step. The supreme court ruled that the MidDayMealScheme had to be continued even now when children are not in school. The food had to be home delivered, or cash transfers for the value of the food had to be made. An extension the court made to the MDM was that now children also had to get food on holidays on which they would have been off from school in the normal situation (Sinha 2021, 327).

All these programs and court rulings showed that the Indian government and Indian society were working very hard to keep the Indian people fed and in a state of food security during these challenging times. This shows how important food security is for the Indian government.

## MGNREGA

When the lockdown was imposed in India, many migrants wanted to return home. There was a surge in reverse migration (Lokhande and Gundimeda, 2021, 585). The stories and images of migrant workers walking or cycling many kilometres to return to their home villages were worldwide news. Nevertheless, why did so many people want to reverse migrate? Migrant workers believed that back in the villages, they could make up for some of their lost income under the MGNREGA. The biggest group in this reverse migration were the daily wage workers, mainly because the living costs in urban areas were too much for them (Vasudevan et al. 2020, 800).

When the Indian government announced the lockdown, it was unclear what would happen with MGNREGA; some locations closed as part of the lockdown. The government decided on April 15 2020, that the restrictions around the lockdown had to be eased up a bit, especially

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for MGNREGA locations. MGNREGA work sites could stay open and provide work for the local people and reverse migrants (Narayanan, Oldiges, and Saha 2021, 84–85). The easing up of the MGNREGA guidelines was part of the Pradhan Mantri Garib Kalyan Yojana Package (Rana 2022, 2).

MGNREGA always has been praised for helping so many rural people to find work.

MGNREGA grew so much during the lockdown that it employed more people than ever before (Narayanan, Oldiges, and Saha 2021, 85). Besides this positive aspect, the whole program was not big enough to employ all the migrants returning to the rural areas (Sharma 2022, 1716). Nevertheless, overall, the different aids provided by the government have helped India through the difficult time of the pandemic.

During the COVID-19 pandemic, the whole country came to a standstill. This negatively impacted the food security in India, both in rural and urban areas. The people suffering the most were the workers without a stable occupation in a formal job. The informal and daily wage workers saw their income being locked away when businesses closed.

The government worked hard to provide different help packages to bring food to the people and to change existing and working initiatives, like MGNREGA, to provide more work. This work helped with creating a small amount of income for the people who lost it all.

### Conclusion

As this research spells out, achieving food security is a challenging task for a developing country like India. Food security entails much more than having the right amount of food. Food security involves nutrition values, living conditions, health care, employment, etc. Food insecurity is a struggle experienced by many Indian people. However, there is no one-size-fits-all solution to food insecurity in rural and urban areas. It is interesting to see that even though the reasons are different, food insecurity in urban and rural areas is connected. In this research I have tried to answer why food security is so vital for both rural and urban India and how food security differs in both urban and rural areas, therefore I have answered different sub questions.

#### *What are the risks of experiencing food insecurity?*

Experiencing food insecurity brings many risks along; not only short-term but also long-term risks are mentioned. To achieve food security, one needs to have more than physical access to food; the living situation and health of the person play an equally important role. The risks for children and adults differ; both experience health issues that can lead to death. For children, the risks often have more to do with growth and their future perspectives, while for adults, diseases are the most significant risks.

The long-term risks of food security are linked to someone's economic status. When children grow up with food insecurity, their health will be compromised; this, combined with stunted growth, makes them less productive and perform less in school. All leads to a diminished economic status and, in the future, food insecurity again, creating a vicious circle.

#### *How is the question of food security between urban and rural India different and how does the state address these two segments differently?*

In rural India, education and employment are fundamental reasons for food insecurity. Because of the lower education rate, the salaries are also lower. Besides employment difficulties, the lack of sanitation and the problems in healthcare facilities for mothers and children are leading factors for mother and child food insecurity.

Urbanisation is one of the reasons for food insecurity in urban areas. Urbanisation happens when the rural population thinks that by moving to urban areas, their livelihood will be better, thus also their food security. So, people suffering from food insecurity in rural areas

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hope to find food security in urban areas, move to urban areas, stress the urban amenities, and become part of urban food insecurity.

In urban India, it is clear that someone's employment is essential for their food security. People in the informal sector have lower food security than people in the formal sector. Besides employment, living arrangements are essential; in slum areas, food insecurity is higher. This concerns these areas' lack of sanitation, health care and shelter.

So, living standards play an essential role in achieving food security in India. The reasons for food insecurity in urban and rural areas look the same; however, they differ a lot in detail. Because of this, the government needs to work hard to fight food insecurity and create a program that both works on a nationwide perspective but which also can be implemented for a more local perspective, like what is happening now with the NFSA.

*How does the state intervene in framing and implementing to achieve food security and what are the challenges?*

The Indian constitution states that Indian citizens have the right to have a dignified life. All the programs and initiatives the Indian government has started work to guarantee this dignified life and Food security is an essential part.

The Indian government has a long history of fighting food insecurity, from the PDS under British rule to the NFSA and new implementations of the PDS in 2013. Child food security is a different battle the Indian government is fighting very hard for. With the 1975 ICDS and the new focus on the first 1000 days, child food security is coming closer. The MDM and Anganwadi centres are two significant steps forward as well. With the implementation of the NFSA, many already existing initiatives and programs were included under this act. By putting these initiatives under the NFSA, they are checked and reformed to fit the needs of the Indian citizens better. Nevertheless, even after the changes under the NFSA, the TPDS still experiences a lot of challenges. Possible corruption, leakages and wastage are the biggest challenges within the TPDS India has to endure.

*How has the COVID-19 pandemic impacted the food security in India?*

The COVID-19 pandemic was a setback for food security in India. The lockdown meant that for many people income stopped. No income meant no food. Urban areas in India were hit harder than the rural areas. In the urban areas, the informal sectors are more extensive and with the lockdown everything came to a standstill, especially the informal sector's daily wage jobs. Many migrant workers moved back to the rural areas due to the different aid

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programs, like MGNREGA. Within the MGNREGA program, the returning migrant workers were able to find a job and earn some income to buy food. By easing up the lockdown so MGNREGA programs could continue, the Indian government tried to soften the blow of the lockdown on food security.

The Indian government has invested a lot in food security, both in urban and rural food security. Thus, to answer *'Why is food security so vital to both rural and urban India and how does the state address to this question and what are the outcomes?'* Besides the health risk reasons in the first chapter, food security in India is much more dependent on someone's economic status; it does differ between rural areas and urban areas because of the possibility of farming your own food. Nevertheless, food insecurity diminishes a person's ability to work and economic status. Here there is a cycle that can be broken with government support. Besides breaking this cycle, bettering the economic status of people will help the national economy and create better development opportunities. So, by fighting food insecurity, the Indian government helps out with the development of the country and so the living situations.

For future research, it might be interesting to see the long-term effects of the COVID-19 pandemic on the food security situation in India. Especially now that the whole world is slowly returning to before the pandemic, and thus, international investments will shift again. It will also be interesting to see how international organisations, like the UN, will react to the challenge of zero hunger, as mentioned in the SDGs, now that 2030 is approaching fast.

## Bibliography

- Ahmad, Jamil, Dastgir Alam, and Shaukat Haseen. 2011. "Impact of Climate Change on Agriculture and Food Security in India." *Journal of Agriculture, Environment and Biotechnology* 4 (2): 129–37.  
[https://www.academia.edu/3370536/Impact\\_of\\_Climate\\_Change\\_on\\_Agriculture\\_and\\_Food\\_Security\\_in\\_India?auto=citations&from=cover\\_page](https://www.academia.edu/3370536/Impact_of_Climate_Change_on_Agriculture_and_Food_Security_in_India?auto=citations&from=cover_page).
- Akshaya Patra. n.d. "Anganwadi Feeding Programme by Akshaya Patra." Accessed May 1, 2023. [https://www.akshayapatra.org/anganwadi-feeding#:~:text=The%20Anganwadi%20Centres%20\(AWCs\)%20are,on%20children%20and%20nursing%20mothers](https://www.akshayapatra.org/anganwadi-feeding#:~:text=The%20Anganwadi%20Centres%20(AWCs)%20are,on%20children%20and%20nursing%20mothers).
- Anand, Shriya, Keerthana Jagadeesh, Charlotte Adelina, and Jyothi Koduganti. 2019. "Urban Food Insecurity and Its Determinants: A Baseline Study of Bengaluru." *Environment and Urbanization* 31 (2): 421–42. <https://doi.org/10.1177/0956247819861899>.
- Aneesh, Mitravinda, and Rita S. Patil. 2021. "Diet Diversity of Urban Households in India during the COVID-19 Lockdown." *Nutrition and Health* 28 (4): 685–91. <https://doi.org/10.1177/02601060211019676>.
- Bapen. 2018. "Introduction to Malnutrition." September 20, 2018. Accessed March 27, 2023. <https://www.bapen.org.uk/malnutrition-undernutrition/introduction-to-malnutrition?start=2>.
- Brahmanand, P. S., Ashok Kumar, Saranya Ghosh, S. Roy Chowdhury, R. B. Singandhupe, R. P. Singh, P. K. Nanda, H. Chakraborty, Suresh Chandra Srivastava, and Mukunda Dev Behera. 2013. "Challenges to Food Security in India." *Current Science* 104 (7): 841–46. <https://www.jstor.org/stable/24092097>.
- Chadha, Neeru. 2016. "Food Security in India: Issues and Challenges." *BEST: International Journal of Humanities, Arts, Medicine and Science* 4 (1): 79–86. [https://www.academia.edu/22745638/FOOD\\_SECURITY\\_IN\\_INDIA\\_ISSUES\\_AND\\_CHALLENGES](https://www.academia.edu/22745638/FOOD_SECURITY_IN_INDIA_ISSUES_AND_CHALLENGES).
- De Muro, Pasquale, and Francesco Burchi. 2007. "Education for Rural People and Food Security A Cross-Country Analysis." *Food and Agriculture Organization of the United Nations (FAO)*. FAO. Accessed April 22, 2023. <https://www.fao.org/3/a1434e/a1434e.pdf>.
- De Onis, Mercedes, and Francesco Branca. 2016. "Childhood Stunting: A Global Perspective." *Maternal and Child Nutrition* 12 (May): 12–26. <https://doi.org/10.1111/mcn.12231>.
- Department of Food and Public Distribution Government of India. 2013. "NFSA." National Food Security Portal. 2013. Accessed May 1, 2023. <https://nfsa.gov.in/portal/nfsa-act>.
- Department of School Education and Literacy Government of India. 2019. "School Education | Government of India, Ministry of Education." February 11, 2019. Accessed May 1, 2023. <https://www.education.gov.in/mid-day-meal>.
- Dewey, Kathryn G., and Khadija Begum. 2011. "Long-Term Consequences of Stunting in Early Life." *Maternal and Child Nutrition* 7 (October): 5–18. <https://doi.org/10.1111/j.1740-8709.2011.00349.x>.
- EC - FAO Food Security Programme. 2008. "An Introduction to the Basic Concepts of Food Security." *Foodsec.Org*. EC - FAO Food Security Programme. Accessed March 27, 2023. <https://www.fao.org/3/al936e/al936e00.pdf>.



Wageningen University and Research (WUR). n.d. "Food Security: Sufficient Safe and Healthy Food for Everyone." Accessed March 27, 2023. <https://www.wur.nl/en/show/food-security-11.htm#:~:text=According%20to%20the%20United%20States,of%20smoking%2C%20obesity%20and%20depression.>

Ganesh. 2022. "Sustainable Development as a Necessity for Food Security in India – A Sociological Analysis." *Bulletin Monumental Journal* 23 (9): 14–27.

Guardian Staff Reporter. 2023. "India's Population Set to Overtake China's by June, UN Figures Show." *The Guardian*, April 19, 2023. Accessed April 22, 2023. <https://www.theguardian.com/world/2023/apr/19/india-almost-3m-more-people-than-china-june-un-world-most-populous-country>.

George, Neetu Abey, and Fiona H. McKay. 2019. "The Public Distribution System and Food Security in India." *International Journal of Environmental Research and Public Health* 16 (17): 1–14. <https://doi.org/10.3390/ijerph16173221>.

Global Hunger Index (GHI). n.d. "India." Global Hunger Index (GHI) - Peer-Reviewed Annual Publication Designed to Comprehensively Measure and Track Hunger at the Global, Regional, and Country Levels. Accessed April 22, 2023. <https://www.globalhungerindex.org/india.html>.

Government of India. 2018. "Strategy for New India @ 75." *NITI Aayog*. Indian Government. Accessed April 22, 2023. [https://www.niti.gov.in/sites/default/files/2019-01/Strategy\\_for\\_New\\_India\\_2.pdf](https://www.niti.gov.in/sites/default/files/2019-01/Strategy_for_New_India_2.pdf).

Government of India. 2022. "The Constitution of India, Act. 21." Accessed May 6, 2023. <https://cdnbbsr.s3waas.gov.in/s380537a945c7aaa788ccfcdf1b99b5d8f/uploads/2023/05/2023050195.pdf>.

Hamayun, Muhammad, and P. Lunven. 1987. "Urbanization and Hunger in the Cities." *Food and Nutrition Bulletin* 9 (4): 1–12. <https://doi.org/10.1177/156482658700900423>.

"India: WHO Coronavirus Disease (COVID-19) Dashboard With Vaccination Data." n.d. WHO Coronavirus (COVID-19) Dashboard With Vaccination Data. Accessed May 6, 2023. <https://covid19.who.int/region/searo/country/in>.

Kang, Yunhee, Anurima Baidya, Alec Aaron, Jun Wang, Christabel Chan, and Erica M. Wetzler. 2021. "Differences in the Early Impact of COVID-19 on Food Security and Livelihoods in Rural and Urban Areas in the Asia Pacific Region." *Global Food Security* 31 (December): 100580. <https://doi.org/10.1016/j.gfs.2021.100580>.

Krishnan, Preethi, and Mangala Subramaniam. 2014. "Understanding the State: Right to Food Campaign in India." *The Global South* 8 (2): 101–18. <https://doi.org/10.2979/globalSouth.8.2.101>.

Kumar, Bantilan, Kumar, Kumar, and Jee. 2012. "Food Security in India: Trends, Patterns and Determinants." *Indian Journal of Agricultural Economics* 67 (3): 445–63. <http://oar.icrisat.org/6590/>.

Lokhande, Nitin, and Haripriya Gundimeda. 2021. "MGNREGA: The Guaranteed Refuge for Returning Migrants During COVID-19 Lockdown in India." *The Indian Economic Journal* 69 (3): 584–90. <https://doi.org/10.1177/00194662211023848>.

Mahadevan, Renuka, and Sandy Suardi. 2013. "Is There a Role for Caste and Religion in Food Security Policy? A Look at Rural India." *Economic*

Mahapatra, Maheswar Singha, and Biswajit Mahanty. 2018. "India's National Food Security Programme: A Strategic Insight." *Sadhana-Academy Proceedings in Engineering Sciences* 43 (12): 1–13. <https://doi.org/10.1007/s12046-018-0947-2>.

Maitra, Chandana. 2017. "Adapting an Experiential Scale to Measure Food Insecurity in Urban Slum Households of India." *Global Food Security* 15 (December): 53–64. <https://doi.org/10.1016/j.gfs.2017.04.005>.

"Malnutrition in Children - UNICEF DATA." 2023. UNICEF DATA. March 6, 2023. Accessed April 2, 2023. <https://data.unicef.org/topic/nutrition/malnutrition/#status>.

Maurya, Neelesh Kumar, and Mahipat Singh Yadav. 2022. "Food Security in COVID-19 Pandemics in India." *International Journal of Agriculture and Nutrition* 4 (2): 17–20. [https://www.researchgate.net/profile/Neelesh-Maurya/publication/364828288\\_Neelesh\\_Kumar\\_Maurya\\_and\\_Mahipat\\_Singh\\_Yadav\\_Food\\_security\\_in\\_COVID-19\\_pandemics\\_in\\_India\\_Int\\_J\\_Agric\\_Nutr\\_20224217-20/links/635cafe38d4484154a42e9f2/Neelesh-Kumar-Maurya-and-Mahipat-Singh-Yadav-Food-security-in-COVID-19-pandemics-in-India-Int-J-Agric-Nutr-20224217-20.pdf](https://www.researchgate.net/profile/Neelesh-Maurya/publication/364828288_Neelesh_Kumar_Maurya_and_Mahipat_Singh_Yadav_Food_security_in_COVID-19_pandemics_in_India_Int_J_Agric_Nutr_20224217-20/links/635cafe38d4484154a42e9f2/Neelesh-Kumar-Maurya-and-Mahipat-Singh-Yadav-Food-security-in-COVID-19-pandemics-in-India-Int-J-Agric-Nutr-20224217-20.pdf).

Ministry of Consumer Affairs, Food and Public Distribution Government of India and Department of Food and Public Distribution. 2023. "CENTRAL ISSUE PRICE UNDER NFSA." Government of India Department of Food and Public Distribution. June 6, 2023. Accessed June 7, 2023. <https://dfpd.nic.in/pds-cipunfsa.htm>.

Ministry of Consumer Affairs, Food & Public Distribution, Government of India. 2021. "Factsheet Details." Press Information Bureau, Government of India. November 3, 2021. Accessed May 6, 2023. <https://pib.gov.in/factsheetdetails.aspx?id=148563>.

Ministry of Finance Government of India. 2020. "Finance Minister Announces Rs 1.70 Lakh Crore Relief Package under Pradhan Mantri Garib Kalyan Yojana for the Poor to Help Them Fight the Battle against Corona Virus." Press Information Bureau. March 26, 2020. Accessed May 6, 2023. <https://pib.gov.in/PressReleasePage.aspx?PRID=1608345>.

— — —. 2023. "India's Real GDP Is Projected to Grow by 9.1 per Cent in 2021-22 (1st RE) and 7 per Cent in 2022-23 (2nd AE), Says MoS Finance Shri Pankaj Chaudhary." Press release. March 13, 2023. <https://pib.gov.in/PressReleaselframePage.aspx?PRID=1906546>.

Ministry of Health and Family Welfare Government of India. n.d. "National Family Health Survey - 5 2019-21 India Fact Sheet." *International Institute for Population Sciences*. Accessed April 22, 2023. [http://rchiips.org/nfhs/NFHS-5\\_FCTS/India.pdf](http://rchiips.org/nfhs/NFHS-5_FCTS/India.pdf).

Ministry of Human Resource Development Government of India, and Gaya Prasad. 2015. "The Gazette of India: Extraordinary." Accessed May 2, 2023. [https://pmposhan.education.gov.in/Files/MDM\\_Rules/MDM-Rules-Without\\_DO\\_Letters/MDMRules2015.pdf](https://pmposhan.education.gov.in/Files/MDM_Rules/MDM-Rules-Without_DO_Letters/MDMRules2015.pdf).

Ministry of Law and Justice Government of India, and Sanjay Singh. 2013. "The Gazette of India: Extraordinary: The National Food Security Act, 2013." Accessed May 6, 2023. <https://nfsa.gov.in/portal/nfsa-act#:~:text=The%20Act%20legally%20entitles%20upto,to%20receive%20highly%20subsidized%20foodgrains>.

Ministry of Women and Child Development Government of India. 2015. "Malnutrition-Free India." December 15, 2015. Accessed April 22, 2023. <https://pib.gov.in/PressReleasePage.aspx?PRID=1781673>.

— — —. n.d. "Integrated Child Development Service (ICDS) Scheme." Accessed May 1, 2023. <http://icds-wcd.nic.in/icds.aspx>.

Mishra, Himani, and Prateek Maheshwari. 2021. "Blockchain in Indian Public Distribution System: A Conceptual Framework to Prevent Leakage of the Supplies and Its Enablers and Disablers." *Journal of Global Operations and Strategic Sourcing* 14 (2): 312–35. <https://doi.org/10.1108/jgoss-07-2020-0044>.

M S Swaminathan Research Foundation (MSSRF), World Food Programme, Athreya, Bhavani, G Anuradha, Gopinath, and Sakthi Velan. 2008. "Report on the State of Food Insecurity in Rural India." *M S Swaminathan Research Foundation (MSSRF)*. M S Swaminathan Research Foundation (MSSRF). Accessed April 29, 2023. <http://59.160.153.188/library/sites/default/files/MSSRF%20FISR%202008.pdf>.

M S Swaminathan Research Foundation (MSSRF), World Food Programme (WFP), Athreya, Rukmani, Bhavani, Anuradha, Gopinath, and Sakthi Velan. 2010. "Report on the State of Food Insecurity in Urban India." *M S Swaminathan Research Foundation (MSSRF)*. M S Swaminathan Research Foundation (MSSRF). Accessed April 20, 2023. <http://59.160.153.188/library/sites/default/files/MSSRF%202010%20Final.pdf>.

*Modelling* 31 (March): 58–69. <https://doi.org/10.1016/j.econmod.2012.11.060>.

Murarkar, Sujata, Jayashree Sachin Gothankar, Prakash Prabhakar Rao Doke, Prasad Pore, Sanjay Lalwani, Girish B. Dhumale, Sanjay R. Quraishi, et al. 2020. "Prevalence and Determinants of Undernutrition among Under-Five Children Residing in Urban Slums and Rural Area, Maharashtra, India: A Community-Based Cross-Sectional Study." *BMC Public Health* 20 (1): 1–9. <https://doi.org/10.1186/s12889-020-09642-0>.

Narayan, Jitendra, Denny John, and Nirupama Ramadas. 2019. "Malnutrition in India: Status and Government Initiatives." *Journal of Public Health Policy* 40 (1): 126–41. <https://doi.org/10.1057/s41271-018-0149-5>.

Narayanan, Sudha. 2015. "Food Security in India: The Imperative and Its Challenges." *Asia & the Pacific Policy Studies* 2 (1): 197–209. <https://doi.org/10.1002/app5.62>.

Narayanan, Sudha, Christian Oldiges, and Shree Saha. 2021. "Does Workfare Work? India's Employment Guarantee during COVID-19." *Journal of International Development* 34 (1): 82–108. <https://doi.org/10.1002/jid.3583>.

Narayanan, Sudha, and Shree Saha. 2021. "Urban Food Markets and the COVID-19 Lockdown in India." *Global Food Security* 29 (June). <https://doi.org/10.1016/j.gfs.2021.100515>.

Padmaja, R, Swamikannu Nedumaran, P. Jyosthnaa, K. Kavitha, Assem Abu Hatab, and Carl Johan Lagerkvist. 2022. "COVID-19 Impact on Household Food Security in Urban and Peri-Urban Areas of Hyderabad, India." *Frontiers in Public Health* 10 (May): 1–15. <https://doi.org/10.3389/fpubh.2022.814112>.

Prakash Upadhyay, and Palanivel. 2011. "Challenges in Achieving Food Security in India." *Iranian Journal of Public Health* 40 (4): 31–36. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3481742/>.

Prendergast, Andrew J., and Jean H. Humphrey. 2014. "The Stunting Syndrome in Developing Countries." *Paediatrics and International Child Health* 34 (4): 250–65. <https://doi.org/10.1179/2046905514y.0000000158>.

Press Information Bureau Government of India and Ministry of Women and Child Development. 2018. "13.63 Lakh Anganwadi Centres (AWCs) of the 14 Lakh AWCs Sanctioned across the Country Are Operational as on 01.06.2018." July 30, 2018. Accessed May 1, 2023. <https://pib.gov.in/newsite/PrintRelease.aspx?relid=181218>.

PROOF. 2022. "What Are the Implications of Food Insecurity for Health and Health Care? - PROOF." November 15, 2022. Accessed March 27, 2023.

<https://proof.utoronto.ca/food-insecurity/what-are-the-implications-of-food-insecurity-for-health-and-health-care/#:~:text=Adults%20living%20in%20food%20insecure,back%20problems%2C%20and%20chronic%20pain.>

Puri, Raghav, Levering Agriculture for Nutrition in South Asia (LANSA), and M S Swaminathan Research Foundation (MSSRF). 2017. "India's National Food Security Act (NFSA): Early Experiences." *Levering Agriculture for Nutrition in South Asia (LANSA) 2017* (14): 1–33.

<https://assets.publishing.service.gov.uk/media/5964831e40f0b60a44000154/NFSA-LWP.pdf>.

Rana, Asish. 2022. "Role Played by MGNREGA during Covid-19 Lockdown Period in India." *International Journal of New Media Studies* 9 (1): 1–4.

<https://ijnms.com/index.php/ijnms/article/view/39>.

Richard, Stephanie A., Robert E. Black, Robert H. Gilman, Richard L. Guerrant, Gagandeep Kang, Claudio F. Lanata, Kåre Mølbak, et al. 2023. "Wasting Is Associated with Stunting in Early Childhood." *Journal of Nutrition* 142 (7): 1291–96.

<https://doi.org/10.3945/jn.111.154922>.

Ritchie, Hannah. 2022. "What Is Childhood Wasting?" Our World in Data. February 6, 2022. Accessed April 2, 2023. <https://ourworldindata.org/wasting-definition>.

Saunders, John B., and Trevor A. Smith. 2010. "Malnutrition: Causes and Consequences." *Clinical Medicine* 10 (6): 624–27. <https://doi.org/10.7861/clinmedicine.10-6-624>.

Shakeel, Adnan. 2017. "The Déjà-vu Of Food Security And The Right To Food In India: DEVELOPMENT IN THEORY AND PRACTICE." *World Affairs: The Journal of International Issues* 21 (4): 88–97. <https://www.jstor.org/stable/48531307>.

Sharma, Kartik. 2022. "MGNREGA: Failure or Success for Migrants during Lockdown." *International Journal of Law Management and Humanities* 5 (2): 1707–18.

<https://heinonline-org.ezproxy.leidenuniv.nl/HOL/Page?handle=hein.journals/ijlmhs16&id=1869&collection=journals&index=>

Sibhatu, Kibrom T., and Matin Qaim. 2017. "Rural Food Security, Subsistence Agriculture, and Seasonality." *PLOS ONE* 12 (10): 1–15.

<https://doi.org/10.1371/journal.pone.0186406>.

Singh, Anjay K., Sanjeev Kumar, and Bhim Jyoti. 2022. "Impact of the COVID-19 on Food Security and Sustainable Development Goals in India: Evidence from Existing Literature." *GNOSI: An Interdisciplinary Journal of Human Theory and Praxis* 5 (2): 92–109. <http://www.gnosijournal.com/index.php/gnosi/article/view/196>.

Sinha, Dipa. 2021a. "Hunger and Food Security in the Times of Covid-19." *Journal of Social and Economic Development* 23 (S2): 320–31. <https://doi.org/10.1007/s40847-020-00124-y>.

Summerton, Siân Alice. 2020. "Implications of the COVID-19 Pandemic for Food Security and Social Protection in India." *Indian Journal of Human Development* 14 (2): 333–39. <https://doi.org/10.1177/0973703020944585>.

Suresh, Veena, Ram Fishman, Johanna Sophie Von Lieres, and Bhavani R. Rao. 2022. "Impact of the COVID-19 Lockdown on the Economic Situation and Food Security of Rural Households in India." *Journal of Agribusiness in Developing and Emerging Economies* 12 (3): 491–509. <https://doi.org/10.1108/jadee-07-2021-0177>.

Suri, Shoba, and Subhasree Ray. 2021. "Global Nutrition Report 2021 – India's Nutrition Profile and How to Meet Global Nutrition Target." *Observer Research Foundation (ORF)*, December 2, 2021. Accessed April 22, 2023. <https://www.orfonline.org/expert-speak/global-nutrition-report-2021/#:~:text=India%20has%20shown%20limited%20progress,and%2010.2%25%20of%20adult%20men.>

Suryanarayana, M. H. 1997. "Food Security in India: Measures, Norms and Issues." *Development and Change* 28 (4): 771–89. <https://doi.org/10.1111/1467-7660.00064>.

Tanksale, Ajinkya, and J.K. Jha. 2017. "Solving Multi-Region Multi-Facility Inventory Allocation and Transportation Problem: A Case of Indian Public Distribution System." *Computers & Industrial Engineering* 110 (August): 175–90. <https://doi.org/10.1016/j.cie.2017.05.037>.

Unicef. 2023. "Undernourished and Overlooked: A Global Nutrition Crisis in Adolescent Girls and Women." *United Nations Children's Fund (UNICEF)*. UNICEF Nutrition and Child Development Section Programme Group. Accessed April 3, 2023. <https://data.unicef.org/resources/undernourished-and-overlooked/>.

United Nations [UN Department of Public Information]. 2023. "We Can End Poverty Millennium Development Goals and Beyond 2015." *United Nations*. Accessed April 22, 2023. [https://www.un.org/millenniumgoals/pdf/Goal\\_1\\_fs.pdf](https://www.un.org/millenniumgoals/pdf/Goal_1_fs.pdf).

Upadhyay, Prakash, and Palanivel. 2011. "Challenges in Achieving Food Security in India." *Iranian Journal of Public Health* 40 (4): 31–36. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3481742/>.

Vasudevan, Gayathri, Shanu Singh, Kamal Dua, and C. K. Jalajakshi. 2020. "MGNREGA in the Times of COVID-19 and Beyond: Can India Do More with Less?" *The Indian Journal of Labour Economics* 63 (3): 799–814. <https://doi.org/10.1007/s41027-020-00247-0>.

World Bank. n.d. "Overview." Accessed April 22, 2023. <https://www.worldbank.org/en/country/india/overview#1>.

World Bank Group. 2022. "What Is Food Security." *World Bank*. <https://www.worldbank.org/en/topic/agriculture/brief/food-security-update/what-is-food-security>.

World Bank Open Data. n.d.a "Population Living in Slums (% of Urban Population) - India." Accessed April 22, 2023a. <https://data.worldbank.org/indicator/EN.POP.SLUM.UR.ZS?end=2020&locations=IN&start=2000&view=chart>.

World Bank Open Data. n.d.b "Rural Population in India." Accessed April 29, 2023b. <https://data.worldbank.org/indicator/SP.RUR.TOTL?locations=IN>.

World Bank Open Data. n.d.c "Rural Population (% of Total Population) - India." Accessed April 29, 2023b. <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=IN>.

World Bank Open Data. n.d.d "Urban Population - India." Accessed April 22, 2023. <https://data.worldbank.org/indicator/SP.URB.TOTL?locations=IN>.

World Bank Open Data. n.d.e "Urban Population (% of Total Population) - India." Accessed April 22, 2023b. <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=IN>.

World Development Indicators - World Bank, UNICEF, World Health Organization, and World Bank. 2022. *Malnutrition: Share of Children Who Are Wasted, 2020. Our World in Data*. <https://ourworldindata.org/wasting-definition>.

## Food Security in India

World Food Programme. 2023a. "India | World Food Programme." World Food Programme. March 31, 2023. Accessed April 22, 2023. <https://www.wfp.org/countries/india>.

World Food Programme. 2023b. "WFP India Country Brief." *World Food Programme (WFP)*. World Food Programme (WFP). Accessed April 22, 2023. <https://docs.wfp.org/api/documents/WFP-0000148425/download/>.

World Health Organisation (WHO). 2014. "Global Nutrition Targets 2025: Policy Brief Series." *WHO* 14 (2). <https://www.who.int/publications/i/item/WHO-NMH-NHD-14.2>.

World Health Organisation (WHO). n.d.a "India: WHO Coronavirus Disease (COVID-19) Dashboard With Vaccination Data." WHO Coronavirus (COVID-19) Dashboard With Vaccination Data. Accessed May 6, 2023a. <https://covid19.who.int/region/searo/country/in>.

World Health Organisation (WHO). n.d.b "Malnutrition." Accessed April 2, 2023. [https://www.who.int/health-topics/malnutrition#tab=tab\\_1](https://www.who.int/health-topics/malnutrition#tab=tab_1).

World Health Organization (WHO). 2022. "UN Report: Global Hunger Numbers Rose to as Many as 828 Million in 2021." *World Health Organisation*, July 6, 2022. Accessed May 8, 2023. <https://www.who.int/news/item/06-07-2022-un-report--global-hunger-numbers-rose-to-as-many-as-828-million-in-2021>.