FOOD SECURITY AND CLIMATE CHANGE

There is food security when all people, at all times, have access to sufficient, safe and nutritious food for a healthy life.[1]

Achieving food and nutrition security is a challenge. On a planet with sufficient food for all,[2] and despite significant reductions in extreme poverty[3] there are still 925 million undernourished people.[4]

Food and nutrition security will be adversely impacted by climate change. Its impacts on global food production will put already vulnerable women and children at increased risk of malnutrition thereby contributing to poor health, decreased educational performance, and poor productivity, all of which ultimately hamper sustainable development, including the wellbeing of populations.

Mainstreaming climate change adaptation and mitigation measures in health, nutrition and agriculture policies and programmes will help assure food and nutrition security for millions.

The Partnership for Maternal, Newborn & Child Health
1000 DAYS
World Vision International
International Diabetes Federation
eminence Center for Health and Development Intelligence
uicc global cancer control
World Health Organization
The NCD Alliance Putting non-communicable diseases on the global agenda
WORLD HEART FEDERATION
International Union Against Tuberculosis and Lung Disease Health solutions for the poor
United Nations System Standing Committee on Nutrition

What do we know?

Good nutrition is key to ensuring good health and wellbeing of populations, yet today, a lack of access to nutritious foods negatively impacts the health of women and children. This in turn affects productivity and sustainable development. Climate change further threatens food security through its impact on global food production and consequently on food prices. With growing populations and higher demand for food, the impact of climate change could result in an increase of 20% of people at risk of chronic hunger.

Health impacts of food and nutrition security

The World Food Summit defined food security as existing when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.[1]

On a planet with sufficient food for all,[2] food availability and food access still remains a major problem. Despite significant reductions in extreme poverty since 1990, the proportion of people worldwide who are undernourished remains unchanged.[3] Today, some 495 million women and children in low and middle income countries (LMICs) are undernourished[5] or receiving less than the minimum level of dietary energy requirement.

Another major problem is undernutrition –a consequence of insufficient nutrient and calorie intake– which is an important determinant of maternal and child health.[6] The nutritional status of a woman before and during pregnancy is a key determinant of maternal health and healthy fetal growth and development.[7] Together with a nutritious diet, an additional 300 calories a day are recommended for most women during pregnancy,[8] including iron, folic acid and calcium supplementation.[9]

Maternal undernutrition is associated with intrauterine growth restriction. This has been associated with low birthweight, and an increased risk of non-communicable diseases (NCDs) such as cardiovascular diseases, later in life for the child.[10] The effects of undernutrition in mothers can continue in her children for three generations.[11]

In addition, overnutrition is a growing problem in LMICs, where women and children have increased access to inexpensive, low nutrient and high calorie foods.[12] Overweight and obesity during pregnancy increases the risk of NCDs including gestational diabetes, pre-eclampsia, pregnancy-induced hypertension and large babies.[13]

Nutritional deficits during a child's first 2 years of life increase the risk of recurring illness, cognitive impairment and faltering growth. This period is also crucial for life-long health and can help protect against chronic diseases. For the first 6 months, exclusive breastfeeding is recommended, after which adequate quantity and quality of complementary foods should be given in parallel to continued breastfeeding through the second year of life.[9, 11]

Without proper nutrition, newborns and young children can face irreversible damage to their cognitive development, which impacts educational performance, reducing opportunities over a lifetime.[14]

Climate change threatens food security

Food security, and consequently nutrition security, will come under additional pressure due to the adverse impacts of climate change on global food production (including crops, livestock and fish products), thereby reducing food availability, stability of food supplies, and access to food.[15-17]

The overall impacts of climate change on food production include decreases in rainfall in the tropical region and reduced water availability in the temperate region[15] (Figure 1).

The tropical region, already most vulnerable to food insecurity,[18] home to 60% of the world's population and 73% of undernourished women and children (about 360 million), is anticipated to be most adversely affected.[15]

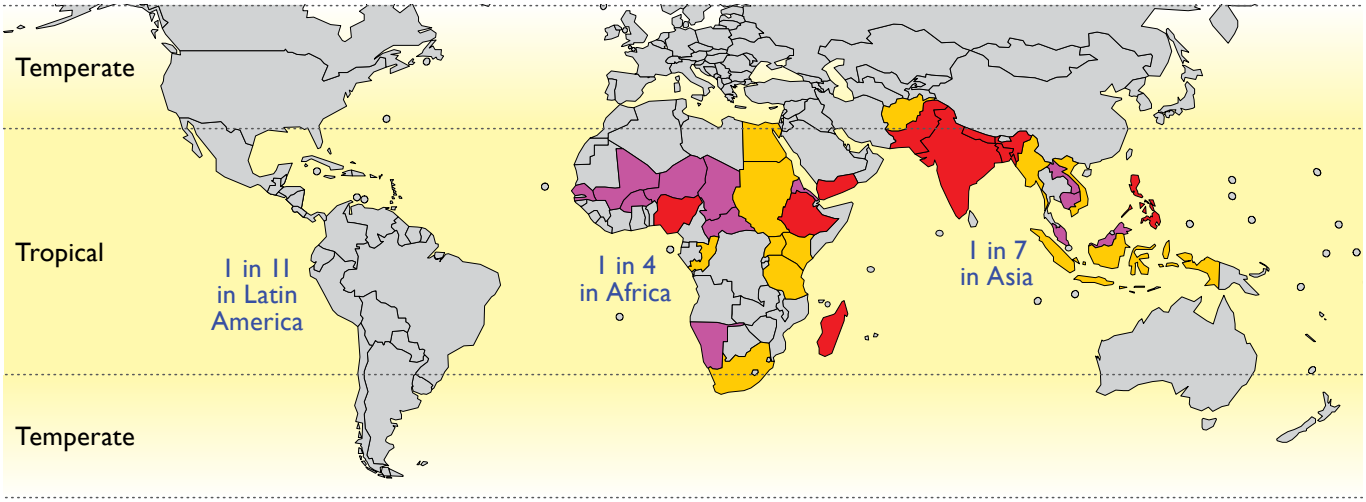
Across and within regions, however, impacts vary. For example, India, home to 41% of women with low body-mass index and 61 million undernourished children[6] would be at increased risk of undernourishment since its food production is estimated to decrease by 30%.[15] Food production in the Philippines, also in the tropical region, would increase by 20%,[15] contributing to a reduction of undernourished women and children currently estimated at 16% and 38% respectively.[6]

The impacts of climate change will affect food prices and volatility, which have a strong impact on food security. The impact of high food prices will be more severe for the poor who rely on purchased food. Families in LMICs tend to spend between 50-80% of their income on food, compared to less than 10% in some developed countries. Families also cope with rising food prices by eating less, cutting how many meals they have per day and reducing the variety of foods.[19]

Food prices are increasing and volatility has been higher since 2000 than during the previous two decades[20] and this is worsened by climate change. For instance, extreme cold in Europe and excessively hot and dry conditions in South America resulted in an increase in global food prices by 8% in the first quarter of 2012.[21]

Figure 1

Share of undernourishment in women and children under 5



Countries with the highest burden of undernutrition in children
Countries with stunting prevalence ≥20% in children under the age of 5 years that together account for >80% of the world's undernourished children

Countries with highest percentage of undernourished women (women 15-49 years old with low BMI)

Countries that appear in both lists

In blue: Share of undernourishment in women and children under 5 by geographic region

By 2020, 3.6 billion women and children will be living in LMICs, an increase of 465 million,[22] boosting food demand. The impacts of climate change together with population growth will result in a deficit of global production versus demand for three of the four major food crops –11% in rice, 14% in wheat and 9% in maize.[23] As many as 20% more people could be at risk of chronic hunger.[24] By 2020, one in 5 newborns LMICs could be born to a life of undernourishment.

What works

Mainstreaming climate change (adaptation and mitigation measures) in health, nutrition and agriculture policies and programs can help address the threats to food and nutrition security.[16]

Promoting nutrition-sensitive and climate-resilient agricultural practices

Successful national nutrition plans should integrate climate change adaptation measures, like breeding crops that are more nutritious and heat-resistant, to address undernutrition. For example, Mozambique had a very high prevalence of vitamin A deficiency. A new variety of orange sweet potato was introduced, leading to a 63% increase in vitamin A intakes for children aged 6–35 months, 169% for children aged 3–5.5 years and 42% among women.[25] Sweet potato is effective in providing vitamin A (an essential micronutrient) and is a good source of carbohydrates, which account for 55-75% of a nutritious diet.[26] It is also a heat-resistant crop requiring less water than other crops.

Developing multi-sectoral country strategies

Multi-sectoral approaches should be developed at the country level,[27] aimed at developing national nutrition strategies that also integrate adaptation measures to climate change. For example, China successfully implemented multi-sectoral action to address undernourishment. By combining anti-poverty policies, granting decision-making power to farm households, public investments in agriculture and market and price liberalization, the number of undernourished fell from 194 million in 1990–92 to 150 million in 2001–03.[28]

Promoting education

Education interventions have a powerful impact over time in preventing undernutrition.[27] Better nutritional practices would, in turn, mean more effective use of available food. For example, the Oportunidades program in Mexico, which combined nutritional education, cash transfers and the provision of fortified weaning food supplements, had an effect of over 1 cm increase in the height of infants exposed to the program during the first 2 years of life.[28, 29]

Reducing food price volatility

Addressing food price volatility can improve, and sustain, food security. A key area for policy action at the country level is improving agricultural production and productivity, by implementing measures to promote agricultural growth, with a focus on smallholders.[20, 30] For example, Mexico implemented contract agriculture, under which the buyer and the farmer agree a price. This market instrument brings certainty to future transactions, as the farmer has a prospective sale of its crop and the buyer has access to a safe supply source at a competitive and predetermined price.[31]

Mobilizing political leadership

Reducing global greenhouse gases (GHGs) emissions is a prerequisite to address climate change. The ultimate objective of the UN Framework Convention on Climate Change (UNFCCC) is to stabilize GHG concentrations in the atmosphere to ensure that food production is not threatened.[32] The latest decisions of the Conference of the Parties to the UNFCCC postponed the implementation of emission reductions to 2020,[33] although the scientific assessment concluded that higher and more immediate emission reductions were required. A high level political leadership is needed to mainstream health and nutrition concerns into the UNFCCC discussions.[16]

Conclusion

Food and nutrition security will be adversely impacted by climate change, affecting already vulnerable women and children the most. The linkages between health, nutrition, agriculture, education and climate change need to be proactively mainstreamed into policies and programmes, to improve nutrition and health outcomes for women and children and ultimately facilitate progress towards achieving sustainable development including the wellbeing of populations.

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