



# The cost of the double burden of malnutrition

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**ECLAC**

Economic Commission for  
Latin America and the Caribbean



WFP

**World Food  
Programme**

wfp.org

## What is the double burden of malnutrition?

Undernutrition and obesity are often treated as separate issues affecting the poor and rich. In reality, both are rooted in poverty and increasingly affect the same vulnerable communities. Middle-income countries (even some low-income countries) are particularly vulnerable to this combination of factors, linked to economic processes and lifestyle changes, leading to excessive diets and their related illnesses.

Globally, 210 million children suffer from undernutrition. This can have irreversible lifelong health consequences such as stunted physical growth and severely impaired cognitive development, and other health problems. It can also place an economic toll on society, particularly from reduced potential productivity.

On the other hand, 41 million children worldwide are overweight, while 1.9 billion adults are overweight or obese. Obesity can lead to non-communicable diseases (NCDs) such as type II diabetes, hypertension and some types of cancer.

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**These are the two sides of malnutrition, and when experienced together they inflict a double burden on countries and their resources.**

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## A shifting burden

Traditionally, health and development policies addressing nutrition have focused on undernutrition. Coupled with an increase in public spending on social protection and health, these policies have eradicated acute malnutrition in most countries in Latin America and the Caribbean (LAC) and reduced chronic malnutrition by 62 percent since 2000.

However, micronutrient deficiencies combined with the rapid increase in overweight, obesity and chronic diseases is becoming a pressing problem in a changing regional context characterised by high geographic mobility, urbanisation and nutrition transition.

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**The Sustainable Development Goals (SDGs) adopted in 2015 call for an end to malnutrition in all its forms and for all people by 2030.**

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As countries go through these transitions, they see abrupt lifestyle alterations marked by changes in diet, physical activity, tobacco consumption, alcohol and drugs, stress and mental health problems – all of which are risk factors for NCDs. As the economy grows and population ages, infectious diseases, and maternal and child undernutrition tend to disappear, while simultaneously NCDs and obesity predominate.

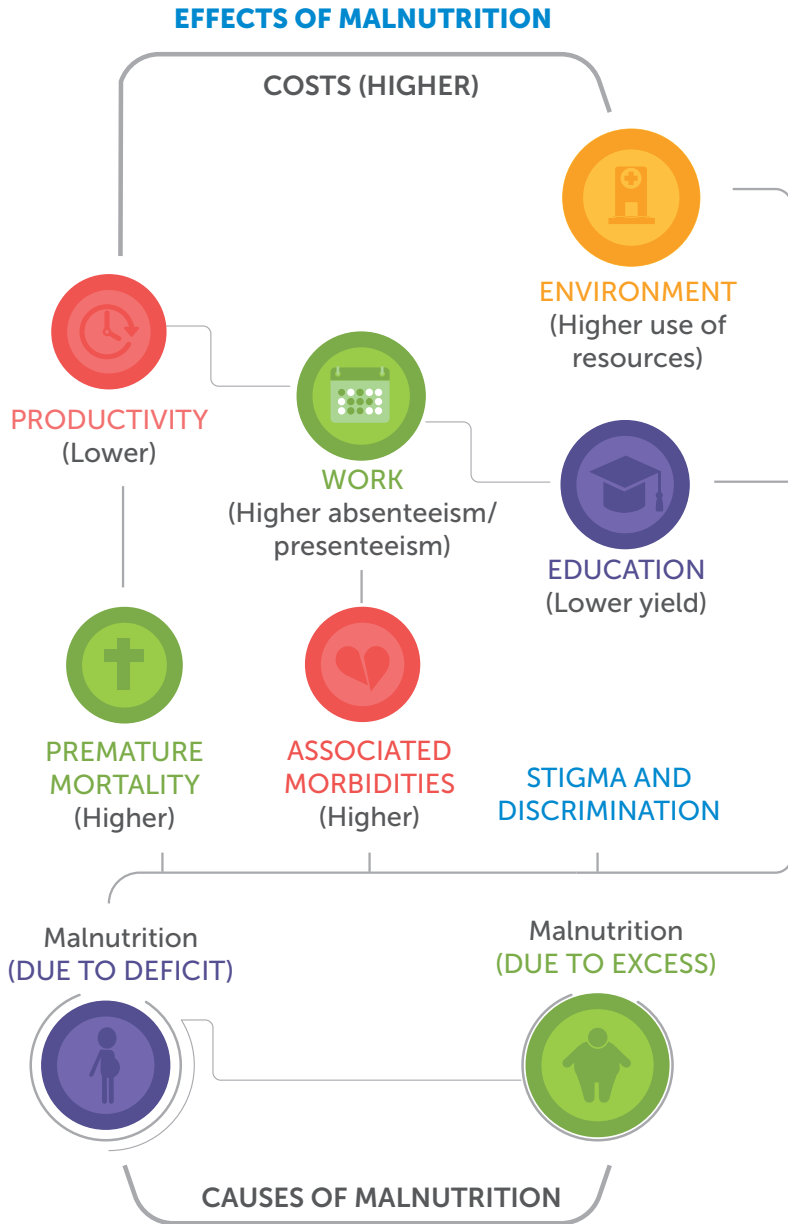


FIG. 1 - Social and economic effects of malnutrition on society.

## The study

The Economic Commission for Latin America and the Caribbean (ECLAC) and the World Food Programme (WFP) partnered to assess the human and economic impact of the double burden of malnutrition for the first time.

The study estimates the effects and costs of malnutrition on health, education and productivity. It draws on a methodology originally designed to measure the cost of child undernutrition, updating it to include the impact of overweight and obesity. In this pilot study, three countries are analysed: Chile, Ecuador and Mexico. The methodology can be replicated for other countries in the region and internationally.

The objective is to utilize the results to inform government and policymakers of the comprehensive impact of malnutrition on individuals, families, and economies of nations, facilitating information to effectively respond to this multifaceted problem. It also intends to draw attention to the importance of the food industry's participation in this response to ensure consistent messaging on nutrition from the public and private sectors alike.

## The scale of the problem in the pilot countries: Chile, Ecuador and Mexico

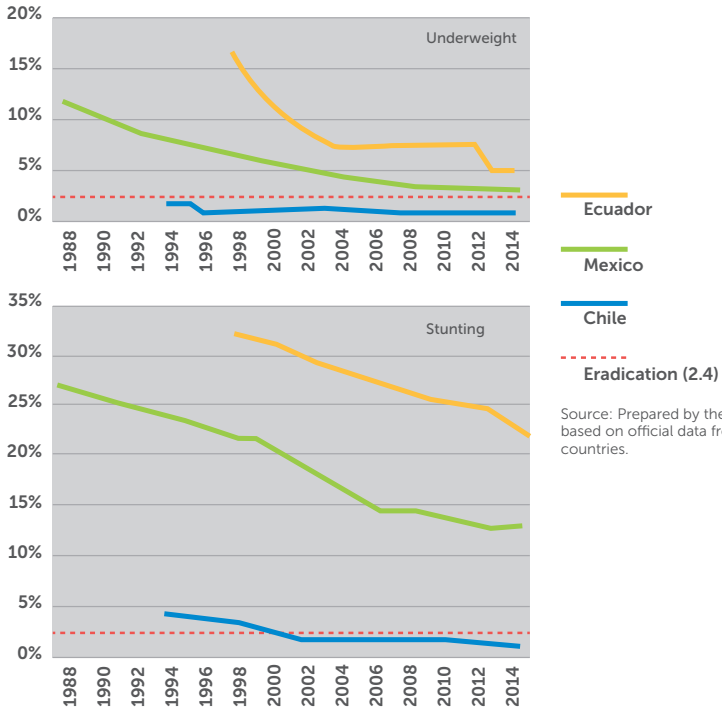
The LAC region is suffering from this double burden. Broadly, as the region has undergone a series of demographic, epidemiological and nutritional transformations, undernutrition has been falling while overweight and obesity levels are rising.

The specific situation varies by country, although the trends are broadly the same. In Ecuador, 24 percent of children under the age of 5 have stunted growth due to undernutrition. In Mexico, this proportion is 13.6 percent.



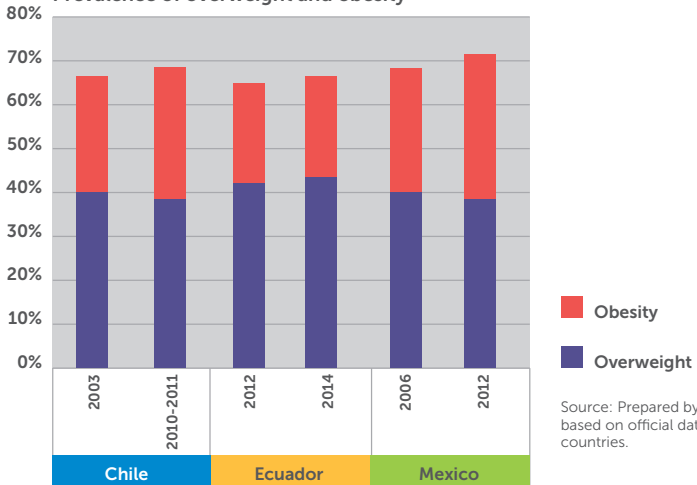
In Chile, a high-income country, undernutrition is considered to be eradicated, but the problem of overnutrition is comparable to that of Ecuador and Mexico. In all three countries, over two thirds of the population is overweight or obese. Women are generally more affected, although numbers are growing in both women and men.

### Trend of the prevalence of undernutrition in the countries analysed, 1988-2014



Source: Prepared by the authors based on official data from countries.

### Prevalence of overweight and obesity



Source: Prepared by the authors based on official data from countries.



## How does malnutrition affect the economy?

Malnutrition has significant negative consequences for morbidity and mortality, educational outcomes, social and labour inclusion, and productivity. These effects, in turn, have economic consequences.

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**The most notable costs of undernutrition come from lost productivity due to premature death and reduced years of schooling; while the costs of overweight and obesity are linked to the health expenditures associated to diseases such as type II diabetes and hypertension.**

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The economic impact of malnutrition's double burden has reached 4.3 percent of gross domestic product (GDP) in Ecuador and 2.3 percent in Mexico – corresponding to US\$4.3 billion and a staggering US\$28.8 billion per year, respectively. In these countries, undernutrition represents a financial burden of 1.5 to 3 times that of overweight and obesity, primarily because of lost productivity.

Yet the financial burden of overnutrition is already significant and on the rise. In Chile, overnutrition generates a cost equivalent to 0.2 percent of GDP: US\$500 million per year. This cost represents a 3.1 percent of the social public expenditure on health in Chile, 17.5 percent in Mexico and 83 percent in Ecuador. Projected since 2015 to 2078, these numbers rise 4.5 percent, 24.9 percent and 138 percent, respectively, per year. These costs represent substantial burdens on both the health care system and families.

As undernutrition declines, overnutrition is rapidly becoming the largest social and economic for Latin America and the Caribbean. The projection carried out up to 2078 estimated that overweight and obesity will generate an annual cost of US\$1 billion in Chile, US\$3 billion in Ecuador and US\$13 billion in Mexico.

The cost in health is particularly relevant for overnutrition, highlighting the consequences derived from the burden of diabetes and hypertension. The costs to the health system associated with these two pathologies in 2014 reached US\$330 million in Chile, US\$1.487 billion in Ecuador and US\$6.134 billion in Mexico. According to the projections, in the next 45 years these costs will grow approximately 70 percent in Chile and Mexico, and almost 150 percent in Ecuador, only for the population in force in 2014 and keeping constant the epidemiological profile in that same year.

## Analysis framework

**UNDER NUTRITION**  
(stunting and wasting)

**OVER NUTRITION**  
(overweight and obesity)

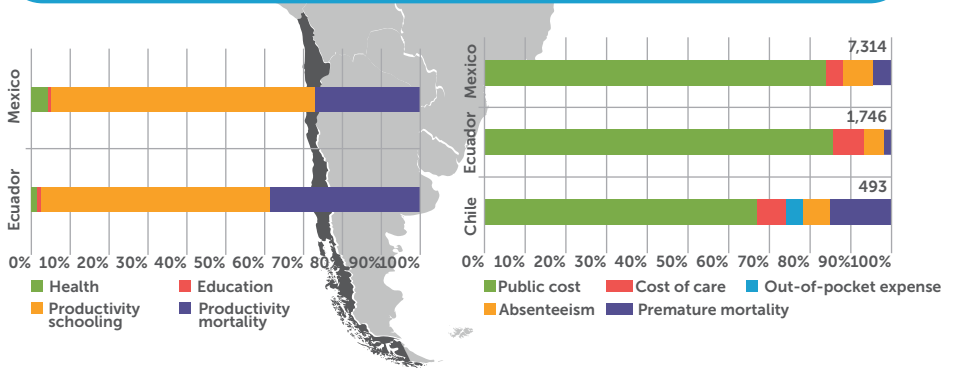


**Social Impact**

Mortality  
Morbidity  
Education

Health  
Productivity

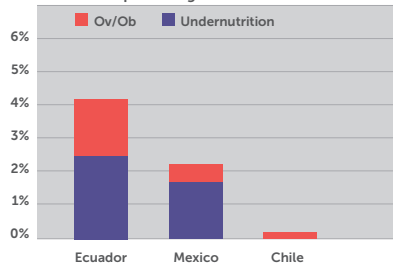
**Economic Impact**



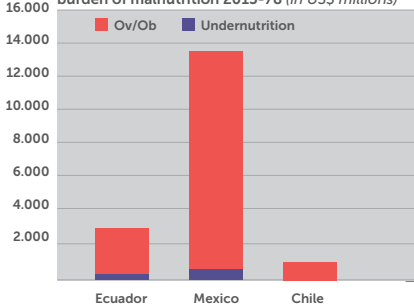
Total cost of the double burden of malnutrition in 2014 (in US\$ millions)



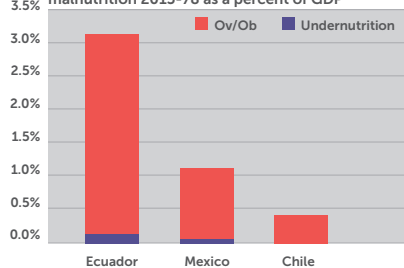
Cost of the double burden of malnutrition in 2014 as a percentage of GDP



Total equivalent annual cost of double burden of malnutrition 2015-78 (in US\$ millions)



Total equivalent annual double burden of malnutrition 2015-78 as a percent of GDP



## What are the impacts on lifelong health?

Undernutrition can be life-threatening for children or have lifelong consequences. Over the past 65 years, chronic malnutrition has caused more than 2 million premature deaths in Mexico and over 300,000 in Ecuador. Approximately one in six acute respiratory infections and between 3 percent and 4 percent of diarrhoea episodes in children are attributable to undernutrition in the two countries.

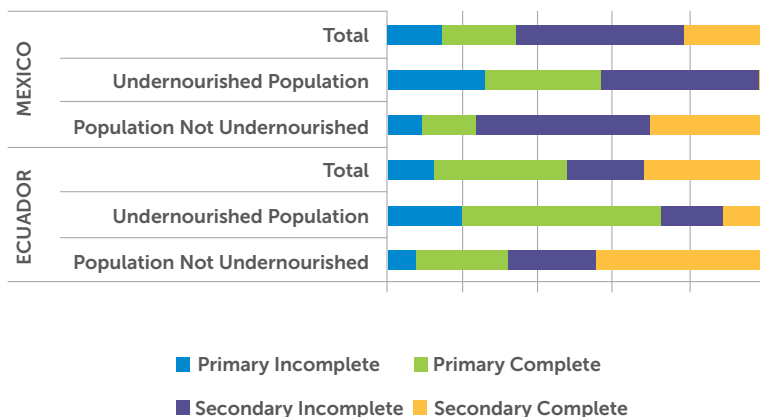
On the other hand, overweight or obesity in adults is the causal factor for at least 21 million cases of non communicable chronic disease in Mexico, nearly 3 million in Chile and nearly 1 million in Ecuador. Hypertension and type II diabetes represent between 90 and 95 percent of all disease cases associated with overweight or obesity. The burden of these diseases will grow by about 50 percent between now and 2030, and mortality will increase by 13 percent in Chile and 26 percent in Ecuador and Mexico, mostly in the over-50 age group. Nevertheless, these diseases increasingly affect younger adults, with about one-third of the disease burden falling on them in the latter two countries.

## How does malnutrition affect education potential?

The primary effect of malnutrition on the educational process of children is observed on grade repetition and school drop out. Undernutrition affects school performance because it can impede cognitive development and limit learning capacity. This translates into a greater probability of late entry, repetition, dropout, and overall low educational achievement.

In Ecuador, children who suffered undernutrition before the age of 5 are 3 times less likely to complete primary school compared to those who do not. In Mexico, children who suffered undernutrition are 11 times less likely to complete secondary school than those who do not. In Ecuador, 32 percent of grade repetition is attributable to undernutrition; this number is 16 percent in Mexico.

The evidence on the effects of overnutrition on education is less conclusive. Obesity could be correlated with lower school attendance and with a decreased accumulation of human capital during childhood and adolescence.





## How does malnutrition affect productivity?

Malnutrition can lead to lost productivity through three main channels: unfulfilled education potential, premature mortality and work absenteeism. The first is linked to undernutrition – and is the prime contributor to the cost of the double burden – while the third is associated with overweight and obesity. Losses caused by premature mortality are associated with both types of malnutrition.

**Unfulfilled education potential** is an important factor in productivity because it limits lifelong work potential. Children who suffer from undernutrition may not reach the same levels of educational attainment as those who do not; and when they become part of the working-age population, their contribution may be inhibited as a result.

**Premature death from malnutrition** means that people either never become part of the economically active population because of undernutrition or stop being part of it as adults due to obesity.

**Absenteeism**, in turn, is a significant and growing contributor to lost productivity. Studies on work absenteeism have shown that overweight and obese workers are absent from work more days per year due to illness, regardless of their occupation. The risk of absenteeism due to illness increases with weight.

### Country productivity snapshot

In 2014, **Mexico** lost US\$20.5 billion to lost productivity due to undernutrition: two-thirds from unfulfilled educational potential and one-third from premature death. This loss amounts to 1.6 percent of GDP. In turn, overweight and obesity cost the country approximately US\$900 million due to premature deaths and work absenteeism.

In **Ecuador**, lost productivity associated with undernutrition cost the country US\$2.5 billion or 2.5 percent of GDP. Loss of productivity from overweight and obesity cost the country US\$123 million.

In **Chile**, approximately US\$100 million were due to lower productivity in 2014 due to overweight and obesity.

Between now and 2078, the projected loss of productivity due to undernutrition will exceed US\$1.8 billion and US\$14.5 billion in Ecuador and Mexico, respectively. The losses due to overweight and obesity will reach US\$13.1 billion in Chile, US\$13.5 billion in Ecuador and US\$114.8 billion in Mexico. Overweight and obesity are much costlier in part because it is increasing as undernutrition decreases; and also because the population it affects – adults aged 19 and older – is much larger.



## Policy implications

Although the highest costs of the double burden are attributed to the increased burden of illness from overweight and obesity, nutritional and health policies cannot overlook the importance of undernutrition, especially given its irreversible impact throughout an individual's life. In fact, given the link between undernutrition and obesity, policies must address the many causes of malnutrition (access to basic services, access to and consumption of safe and nutritious food, physical activity, etc.) and design interventions that consider the entire life cycle.

Malnutrition is linked to the different types of inequalities that exist in countries of Latin America and the Caribbean. Therefore, policies should consider the concentrations of malnutrition in different geographic areas and among vulnerable groups. The lack of access to quality food has implications for overweight and obesity, which disproportionately affect lower-income families.

### Existing policies in the pilot countries

Chile has shown leadership in nutritional policy over the past few decades, first eliminating undernutrition and then addressing overnutrition. The country implemented a 13 percent tax on sugary beverages, then increased it to 18 percent in 2014 – among the highest rates worldwide. Chile has also introduced regulations into food advertising, restricting the advertising of unhealthy foods to children.

Ecuador's nutrition policies are centred on undernutrition. In 2009, it began the Chronic Malnutrition Accelerated Reduction Project to coordinate interventions across its territories. It then introduced the National Strategy for Nutrition Action, coordinating the efforts of different ministries. These efforts include

ensuring coverage of child development services, improving access to and consumption of nutritious foods, and increasing access to basic water and sanitation services.

With respect to overweight and obesity, Ecuador included a target for reducing obesity prevalence to 5 percent in its National Plan for Good Living. As part of this initiative, it promoted good eating habits and included health promotion activities in schools.

In Mexico, the PROSPERA social inclusion program has been the corner stone of social policy and the main food distribution program with a coverage of more than 6 million families. In addition, the Food Support Program that serves almost one million households and the Social Milk Supply Program with 3.3 million beneficiary households. In 2010, the Government also launched initiatives to improve nutrition information, promote physical activity and regulate food and drink in schools in order to reduce overweight and obesity.

### Why should the private sector care?

The results of this pilot study highlight important social and economic challenges resulting from the double burden of malnutrition. Governments can help through clear policies and incentives to ensure reliable food labelling, physical activity programs, and the support of community-based nutrition education programs – but what about companies?

The food industry has an important role to play. The role may be more obvious for overweight than undernutrition; but the latter negatively impacts productivity, which means that companies should be concerned. The impact of the double burden of malnutrition can have a direct effect on the performance of companies.



## About this study

The Economic Commission for Latin America and the Caribbean (ECLAC) and the World Food Programme (WFP) are committed to developing tools that generate the evidence required by decision makers to design public policies and implement effective programmes to eradicate malnutrition in all its forms. In 2005, ECLAC and WFP partnered to develop the Cost of Hunger, an analysis framework to understand the social and economic impact of undernutrition. To date, the methodology has been applied in 11 countries in Latin America and the Caribbean and in more than 15 countries in Africa. In many cases, the application of the tool has generated the information necessary to forge alliances and to advocate in favour of budgetary allocations to act.

With the Cost of the Double Burden of Malnutrition, the growing number of countries going through a nutrition transition now have a tool to measure the combined effect, currently and in the future, of undernutrition and overweight. It is our hope that this work will inform the debate on the importance of changes in the nutritional panorama of the region and the world, and will position the issue of the double burden of malnutrition in the public agenda to design programs and public policies that respond to this challenge in a timely manner.

## ...And how can it help?

The food industry has an opportunity to guarantee the production, availability, and accessibility of healthier food products. It is well positioned to sensitise consumers on healthy food choices, particularly when it comes to providing clear and reliable nutrition information to make responsible dietary decisions. Nutrition education is an important part of the solution to overweight in Latin America and the Caribbean because an informed consumer can make healthy lifestyle choices at the individual level.

Companies have a notable opportunity to provide consumers with healthy food options by developing new products that meet individual nutritional needs and reformulating existing products to be healthier and encourage portion size control. In doing so, industry faces the challenge of satisfying consumer expectations for taste, quality and price, yet it also opens new market prospects.

## The full report can be found at the following links:

CEPAL: [www.cepal.org/es/areas-de-trabajo/desarrollo-social](http://www.cepal.org/es/areas-de-trabajo/desarrollo-social)

WFP: <http://es.wfp.org/doble-carga-double-burden>

## Acknowledgement:

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