

# Researchers reverse stunting in children, challenging WHO recommendations

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The children were followed by health professionals at health centers set up in eastern Uganda. Credit: Jack I. Lewis, University of Copenhagen.

At present the WHO does not recommend nutrient supplements for children with stunted growth—a health problem that affects more than one in five children under the age of 5 globally. The rationale is that supplements do not benefit growth, but instead put children at risk of becoming overweight. However, this is wrong according to a new study

from the University of Copenhagen: supplements can reverse stunting.

More than 20% of the world's children under the age of 5 have a low height in relation to their age due to undernutrition or malnutrition, i.e., they are stunted. Though childhood stunting does not present an acute danger like famine, children with stunted growth are subject to chronically impaired [childhood development](#).

Typically, they end up being a few centimeters shorter than their natural predisposition. But this is just the visible manifestation. A symptom of the body trying to save where it costs least to do so. The development of a child's muscles and organs, as well as their [mental development](#), are also impacted.

"The body is already deficient, meaning that their bones and muscles are not getting the nutrients, especially minerals and proteins, required for optimal growth. It affects the health and physical abilities of these children throughout their lives," explains Benedikte Grenov of the University of Copenhagen's Department of Nutrition, Exercise and Sports.

Grenov is one of the lead authors of a new UCPH study conducted in collaboration with researchers at Makerere University in Uganda. The study challenges the way health authorities around the world—with the World Health Organization (WHO) at the forefront—have framed the treatment of childhood stunting.

A longstanding consensus has been that nutrient supplements are unable to stimulate growth after the age of two. As a result, initiatives aiming to use supplements for prevention of stunting at present are focused on providing small amounts to [vulnerable children](#) under two years of age, and even these projects are few and far between. The fear has been that energy-dense supplements instead could increase the risk of obesity and

health problems associated with being overweight.

Such thinking is wrong according to the new study, in which researchers provided 750 stunted children in Uganda with nutrient supplements over a three-month period.

"In fact, our research demonstrates that if children with stunted growth are not treated, things go wrong. But if they are, impaired development can be reversed, even in children older than two. We managed to achieve this with the children who participated in our study. And this could mean that the children's living conditions as adults will improve, so that they become healthier, stronger and have a reduced risk of lifestyle diseases," says Benedikte Grenov. "Therefore, we hope that these results can help shift the thinking with regards to the treatment of stunting, and in doing so, change the recommendations."

## **Plant protein as good as dairy**

One aspect of the study was to investigate whether milk-based supplements are particularly well-suited to help improve the lives of the many stunted children around the world.

While the results clearly demonstrate that milk-based supplements are beneficial for the healthy growth of children, the cheaper and more climate-friendly, plant-based alternative works just as well.

"We had actually expected to see a difference, because milk contains better quality protein and certain micronutrients that have been linked to growth-promotion. But the difference we see is so minimal, that scientifically, it makes no sense to talk about it." The big difference, according to the researcher, was between children who received a supplement and those who received nothing at all.

"This has the positive consequence that nutrient supplements can be produced at a lower cost and in a more climate-friendly manner. And even though the plant protein we used was a special type that requires specific production facilities, plant proteins generally have the advantage that they are easier to produce locally, in places where the problem is greatest."

## **A wide-ranging problem**

These benefits can prove important to a solution strategy. With roughly 150 million stunted children under the age of five worldwide, any initiative to help them all can be insurmountable, both economically and practically.

Benedikte Grenov acknowledges that because the problem is so widespread, treating all children is practically impossible. But you could, for example, begin by offering treatment to those with severe stunting.

"The good news is that all of the children, including those with severe stunting, were able to reverse the negative trend and begin growing fat-free mass—which means muscles and organs—when provided with the supplement. These children have delayed development and typically also lower IQs in the long run. So, if supplements can be used for them first, we will have come a long way," says Grenov.

"That could be one way to go. Another could be, more generally, to look at whether regular family diets could be improved with an advanced multi-micronutrient 'vitamin'-pill and easier access to high-quality protein. Indeed, it is this mixture that is so critical for optimal child growth."

## **The control group continued to grow poorly**

Children in the [control group](#) did not receive supplements and thereby remained in the same situation, which is normal for most stunted children.

They continued their unfortunate development and became more and more stunted. They also experienced unhealthy growth in fat mass rather than in fat-free mass—muscles and organs.

Overall, development in both their height and body composition was negative, unlike the children who received supplements. Those who received supplements grew taller and added lean mass without gaining additional fat.

The nutrient [supplement](#) used in the study was a lipid-based mixture of blended peanuts with added milk or soy protein, a vitamin and mineral mix and carbohydrate used as a sweetener. The texture is like marzipan and it has a sweet, peanut butter-like taste.

The mixture is delivered in small sachets that do not require mixing, to avoid contamination, and which the children can eat straight from the package.

Provided by University of Copenhagen

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