



# Stronger efforts are needed to safeguard the nutrition of school aged children

Undernutrition is an increasingly critical and urgent challenge facing school aged children, particularly in resource poor settings, as a result of climate change, say Maria Nilsson and colleagues.

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Climate change, weather, and climate variability—as shown by the increasing frequency of extreme weather events, higher temperatures, and rising sea levels—are expected to have multiple consequences on people's access to sufficient, safe, and nutritious food, particularly in low-and middle-income countries. For example, in South Asia and South-east Asia, food security—that is the availability of food and people's ability to access it—may substantially worsen because of reduced yields due to drought and increased soil salinity as a result of sea level rises.<sup>1</sup> This is compounded by the fact that food that meets essential nutrient requirements is not always affordable and accessible by the world's poorer communities.<sup>2</sup>

It is estimated that currently one billion children live in countries at extreme risk from the effects of climate change.<sup>3</sup> Because of the negative effects of climate change on food security, undernutrition, including micronutrient deficiency, is identified as one of the biggest threats to child health, especially for children in resource poor settings.<sup>4</sup> However, most of the focus on child health has been on the first five years of life, evidenced in the significant investment and progress in the health and nutrition of infants and young children over the past five decades.<sup>5</sup> Given the potential impact of climate change on child health and nutrition, and to safeguard the investment in infants and pre-school children, existing efforts must continue, but increased attention must be given to protecting and promoting school aged children's nutrition so they can develop and grow into healthy adults.

School aged children need nutritious diets for their physical and cognitive development.<sup>6</sup> For example, low intake of high value nutrients present in vegetables, fruits, and animal source foods can lead to deficiencies in essential micronutrients (vitamins and minerals) among children at all ages. A concerning example of such is a 2015 study of 1010 girls aged 13 to 17 years in rural India, where the prevalence of any anaemia was very high at 87%, with moderate and severe iron-deficiency anaemia in 65% and 5% of girls, respectively.<sup>7</sup> Micronutrient deficiencies contribute to stunting in an estimated 149 million children globally, the vast majority of whom live in Africa and Asia.<sup>8</sup> Hence, there are many reasons for safeguarding the nutrition of school aged children.

In addition to broader societal level interventions, such as climate change mitigation and health system

strengthening, we suggest specific measures can be taken at the individual and community level. These include: i) micronutrient supplementation or the provision of multi-fortified foods at school and/or in the community; ii) information about healthy diets distributed to children and care givers through health centres and schools; iii) increasing varied, local food production; and iv) school meal programmes.

Such measures can contribute to positive health and nutrition outcomes for school aged children, for example, weekly iron supplementation for adolescents has been shown to reduce the risk of anaemia, and nutritional education through school gardens has improved school children's nutritional agency.<sup>9</sup> In addition, several studies in low- and middle-income countries have shown that school meal programmes have positive effects in correcting nutritional deficiencies and improving children's growth as measured by weight and height.<sup>10</sup> Including locally produced food in school meals could also provide structured institutional demand and a predictable market for smallholder farmers, benefitting child nutrition as well as food security more broadly.<sup>11</sup> However, we reiterate that current global inequalities resulting from the negative effects of climate change point to the urgent need to transform and adapt food systems from the global to the local level to ensure nutritious diets for children in all parts of the world.

Children are one of the most vulnerable groups exposed to the health impacts of weather, climate variability and change. An increasing number of studies on climate change and child health have been published in recent years, but there are weaknesses and gaps. For example, there is a lack of studies on school aged children and on child nutrition more broadly related to climate change, and few studies from low-income countries.<sup>12</sup> To our knowledge there are no longitudinal studies, and study designs and outcome measures vary greatly which makes it difficult or even impossible to draw conclusions.<sup>12</sup> The deficit in research evidence on the impact of climate change and the ensuing impact of food insecurity on school children's health and nutrition in low-and middle-income countries, must be urgently addressed and adequately funded.

Over the last 50 years, the survival, health and nutrition of infants and young children have substantially improved. This has been made possible through research, economic development, international collaborative action, and policy and

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development initiatives. Given increasing pressure from the effects of climate change, the health and nutritional needs of school aged children, the majority of whom live in low- and middle-income countries, must be given greater priority in research, policies, and programming.

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