



ADOLESCENT WELLBEING

Realising the potential of schools to improve adolescent nutrition

Valentina Baltag and colleagues argue that school health programmes have the potential to mitigate a growing epidemic of malnutrition in children and adolescents

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Malnutrition in all its forms—undernutrition, anaemia, overweight, and obesity—is reaching alarming levels among adolescents worldwide.¹ Between 1990 and 2016, the number of adolescents (young people aged 10–19) with overweight or obesity increased by an estimated 176.9 million.² Almost one in five adolescents globally now has anaemia, representing an increase of 74.2 million since 1990.²

Malnutrition not only affects development of adolescents by compromising musculoskeletal growth, cardiorespiratory fitness, neurodevelopment, and immunity³; it also has a profound effect on the future health of adolescents themselves, their children, and ultimately a nation's human capital. Unhealthy diets are among the health risks established in adolescence that contribute to an estimated 70% of preventable deaths from non-communicable diseases in adults.⁴ Conversely, better nutritional quality has been linked to improved height and body mass index trajectories over age and time.⁵

The drivers of adolescent malnutrition are shifting. Economic development, urbanisation, and globalisation of food chains have led to highly processed food forming a higher proportion of diets. One effect has been a triple burden of malnutrition in adolescents in many countries—underweight, micronutrient deficiencies, and overweight.⁶ Exposure to social media influencers and advertising that exploit adolescents' developmental vulnerability predict obesity,^{7,8} with effects mediated by insufficient physical activity, poor sleep quality, and increased calorie intake.⁹ Gender inequalities exacerbate the problem for adolescent girls, who in some settings bear the consequences of unequal food allocation within households, increasing the risk of malnutrition for them and any future children, especially in countries with high rates of adolescent pregnancy.^{3,10}

Against this background, programme design must consider the interconnectedness of protective and risk factors for adolescent malnutrition across multiple domains of wellbeing. These connections include macro level policies (eg, poverty reduction strategies and social protection measures), education (eg, health and nutrition literacy, shared values, and social interaction around food), life skills (eg, making healthy lifestyle choices, ability to critically assess online content), agency and resilience (eg, empowerment to question gender biases and oppose discriminatory practices), and safe and enabling food

environments (eg, healthy school food, regulation of marketing, food security, micronutrient supplementation, and food oriented social protection). We argue that schools are the only institutions that are capable of integrating actions across these domains and, importantly, sustaining them over time.

Schools are uniquely placed to improve adolescent nutrition

Schools have naturally evolved to embrace functions beyond education, and their substantial contributions to the economy—not least as a place where children are kept safe while parents work—became conspicuous during the covid-19 pandemic. A school that makes systematic efforts to include nutrition, as well as other health and wellbeing considerations, in all aspects of school life is termed a health promoting school (box 1).^{11,12}

Box 1: School health definitions

- Health promoting school: A school that consistently strengthens itself as a safe, healthy setting for teaching, learning, and working¹¹
- School health: A multisectoral approach to design and deliver coordinated and comprehensive strategies, activities, and services that are integrated and sustained within the education system for protecting and promoting the physical, emotional, and social development, health, and wellbeing of students and the whole school community¹³
- School health services: Services provided by a health worker to students enrolled in primary or secondary education, either within school premises or in a health service that has an official agreement with the school to provide health services to its students.¹⁴ School health services are one component of school health
- Whole school approach to health: An approach that goes beyond the learning and teaching in the classroom to pervade all aspects of the life of a school. Includes teaching content and methods, school governance, and cooperation with partners and the broader community, as well as campus and facility management. It is a cohesive, collective, collaborative approach by a school community to improve student learning, behaviour, and wellbeing and the conditions that support them¹¹

The global progress in school enrolment since 2000 in primary and secondary education offers an unparalleled opportunity to reach many more adolescents with essential information and services.

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Students spend an average of 7590 hours in the classroom over 8-10 years during primary and lower secondary school¹⁵; for many this is more than they meaningfully spend with their parents or guardians.

This prolonged contact offers opportunities for schools to contribute to better nutrition in various ways: ensuring healthy school meals and setting standards for foods and beverages in schools, providing micronutrient supplementation and deworming (where appropriate), and by instilling sound food values and helping adolescents develop cognitive and socio-emotional skills that contribute to healthy and sustainable eating behaviours.^{16 17} Adolescence is when young people develop autonomy and increasingly independently decide what to eat and how much, and to what extent to be physically active or sit in front of a screen. It is therefore the ideal time to influence choices by shaping environments that make healthy choices possible and easy.⁸

Schools can extend beyond the promotion of healthy nutrition to link students with nutrition services when required.¹⁸ Many schools already offer health services for a range of conditions, including diabetes, overweight, obesity, and undernutrition.^{14 19 20} Recently, a World Health Organization guideline made a strong case for investing in nutrition services as part of a comprehensive package of school health services. If implemented well, such services will have lasting benefits for students, including for nutritional outcomes.¹⁴ To improve nutrition, the guideline recommends interventions that are essential everywhere such as promoting reduced intake of sugars, providing nutrition education, screening for nutrition problems, and referral and support for anaemia and overweight. It also includes interventions that are setting or population specific such as screening for diabetes, micronutrient supplementation, and deworming.

Investment in school health for better nutrition

At the peak of the covid-19 pandemic, 1.5 billion children and adolescents were out of school and missed meals, essential information, and health services.¹⁵ This experience emphasises the pivotal role of schools in development of children and young people beyond the provision of education and has renewed resolve to support sustainable school meals programmes. The School Meals Coalition—an initiative of governments and diverse partners to drive action—has been established to urgently re-establish, improve, and scale up food and education systems, support pandemic recovery, and drive actions to achieve the sustainable development goals.²¹

Even before the pandemic, many governments had shown strong commitment to school based nutrition interventions,¹⁷ making important efforts over the past decade to expand programme coverage.²² Indeed, school health and nutrition programmes are among the most ubiquitous public health programmes.²³ However, comprehensive programmes are rarely expanded beyond individual schools or districts, and whole school approaches are rare. Moreover, despite the growing commitment to school health and nutrition programmes, the implementation of some of their components has declined.²⁴ WHO surveys on the implementation of nutrition related policies in 2010 and 2017 showed a decrease in the number of countries reporting, for example, school fruit and vegetable schemes, school milk schemes, standards for marketing of foods and non-alcoholic beverages to children in schools, and having safe drinking water available free of charge.²⁴

Worthwhile investment

Promoting healthy growth and nutrition is a good investment.^{25 26} and the school system represents an exceptionally cost effective

platform for such an investment.^{23 26} The return on investment from school feeding programmes, for example, can be as high as \$9 for every \$1 invested.²² These benefits are realised by creating value across multiple outcomes such as education, health and nutrition, social protection, and improving local agriculture practices.

The efficiency and cost effectiveness of school feeding programmes could be greatly enhanced by integration with other priority health interventions. School health and nutrition programmes typically include an integrated package of health and nutrition interventions such as school feeding, micronutrient supplementation, deworming, health screening, vaccination, and water and sanitation interventions. Economic analyses show that the economic benefits of an essential integrated package of interventions delivered through schools outweigh the costs while remaining feasible in low and middle income countries.²⁷

Longer term, these investments translate into the accumulation of national wealth. Seventy per cent of the wealth of high income countries derives from accumulated human capital: the sum of a population's health, skills, knowledge, experience, and habits.²⁸ In low income countries, where most people do not have the opportunity to realise their full potential, the contribution to national wealth is nearer 30%.²⁸ A key factor in this major difference is the level of support for healthy growth and nutrition during the first 8000 days of life, from conception to the early 20s.¹

Finally, investing in nutritious diets—including school meals, essential nutrition services, and nutrition education—as part of integrated school health and nutrition programmes is important to secure investments made earlier in life. Most countries now recognise the need for investments from conception to the second year of life (the first 1000 days), but fewer secure those early gains by continuing through the next 7000 days into adulthood. Yet healthy growth and nutrition during adolescence has a big effect on wellbeing and quality of life in adulthood.²⁵ Ultimately, adolescent growth and nutrition carry lifelong consequences for employability and earning potential, determining whether a young person is able to take full advantage of vocational, academic, and professional training. It is surprising that countries often invest appropriately in learning, with good curriculums, schools, and trained teachers yet often fail to accompany this with appropriate investment in the health and nutrition of the learner: one recent (pre-covid) estimate suggests that low and middle income countries invest \$210bn (£174bn; €200bn) a year in education for the two decades following the second year of life but just \$4bn in their health and nutrition.²⁶

Global standards for health promoting schools

Health promoting schools, also known as healthy schools or schools for health, are vehicles to promote school attendance, better cognitive performance, physical activity, better hygiene practices, and healthier diets and better nutrition.¹¹ To truly integrate health and health promotion, education systems must integrate health promotion in all aspects of school life: school policies, school physical and social environment, formal and informal curriculum, links with parents and school community, and access to school health services.

WHO, Unesco, Unicef, the World Bank, and other partners²⁹ have promoted this whole school approach for decades, but many initiatives have narrowly focused on single problems (eg, HIV/AIDS prevention) or attempted change locally without delivering systemic changes at national or subnational levels.¹² To address this, WHO and UN partners have developed global standards for health promoting schools, providing a framework for health promoting

education systems.^{11 12} The eight global standards form an ecological system with interdependent and inter-related elements. [Figure 1](#) shows the value of the framework for tackling the key drivers of the

global epidemic of malnutrition by anchoring school nutrition into every aspect of school life.

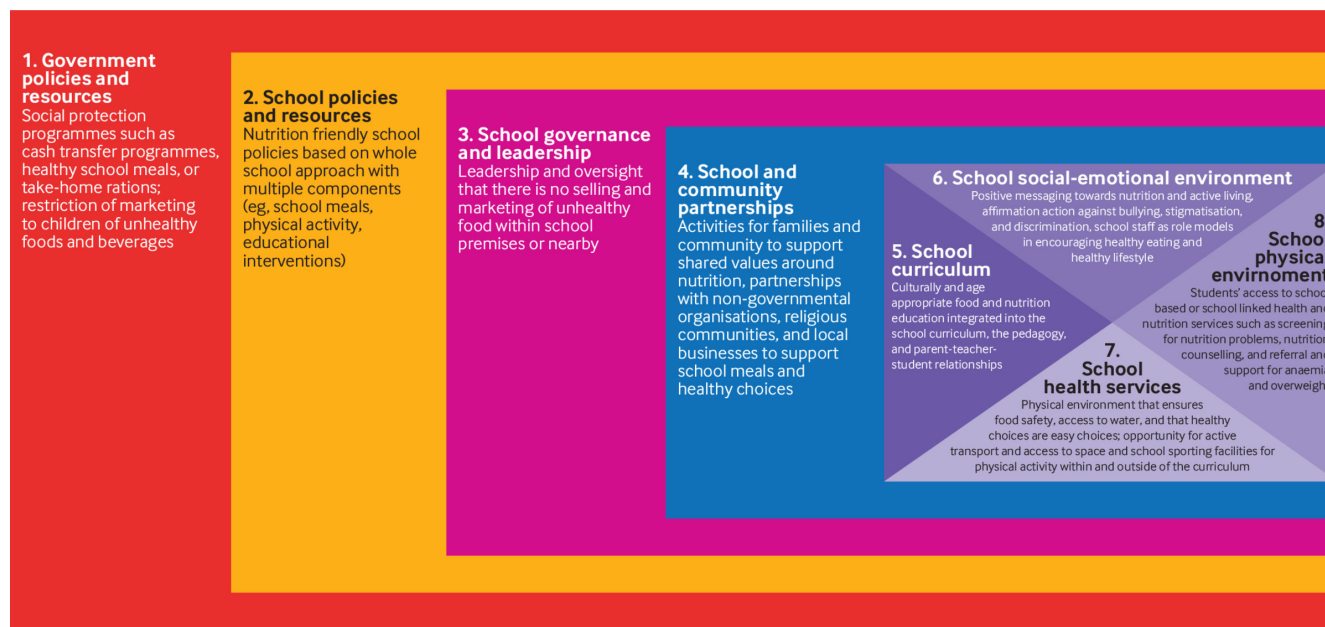


Fig 1 | Elements of global standards for health promoting schools and their relevance for tackling drivers of the global epidemic of malnutrition

Strengthening health promoting education systems

Over the years, countries have invested in generating nationally representative and scientifically credible data on behavioural and social determinants of health and nutrition in school age children, such as the global school-based student health and health behaviour in school aged children surveys. However, comparable data on school health and nutrition policies, programmes, and services are lacking.

To address this gap, several initiatives are under way. The School Meals Coalition is developing a measurement framework for school meals programmes and will create a global database. Beyond school meals, harmonisation of indicators and data collection systems is needed to monitor integrated school health and nutrition programmes.

WHO and Unesco, in consultation with partners, have recently redesigned the global school health policy and practices survey to align with their global standards.¹¹ To be completed by school leaders, the revised survey will gather evidence on some of the indicators that accompany the global standards and help monitor implementation.³⁰ North Macedonia, for example, is currently revising its education performance monitoring framework and is considering using this process as an opportunity for some alignment with the global standards.

The implementation and sustainability of whole school approaches to healthy growth and nutrition in education is a political choice and responsibility and therefore needs commitment from higher levels of government and collaboration between sectors. Many schools run health promotion activities, but this does not necessarily mean that the school has a structured and systematic plan according to the principles or formally endorsed standards for health promoting school. Good examples exist in which national policies that mandate collaboration between health and education sectors

for school health are accompanied by sustainable funding and training of teachers in health and wellbeing, starting during teacher training courses. This translates into individual schools adopting formal health promoting school approaches. The School for Health in Europe Network, for example, reports that in 10 member countries more than half of the primary schools are implementing a structured systematic plan for the health, wellbeing, and the development of social capital of all pupils and of teaching and non-teaching staff.³¹ In Hungary, the formal health promoting school approach is mandatory and the national educational system provides funding to support implementation; there is also a national monitoring and evaluation programme for health promotion in schools.³² More examples will be featured in the global status report on school health and nutrition, led by Unesco, that will be launched in autumn 2022.

As schools help students to recover from the effects of covid-19 related closures, it is timely to ensure that nutrition, health, and wellbeing more broadly³³ become integral to education systems. Only then can programmes and interventions be sustained.

Key messages

- Schools are well placed to promote nutrition literacy, ensure food security, offer a healthy environment, and link students with health and nutrition services
- Promotion of healthy growth and nutrition is not yet fully embedded into education systems
- The disruption of school health and nutrition services during the covid-19 pandemic has sharpened the resolve of countries to restore investment in school health and nutrition
- WHO, Unesco, Unicef global standards for health promoting schools provide a framework to help governments embed healthy development and nutrition within education systems

Contributors and sources: VB and GP have studied and reported widely on strengthening health and education sector response to adolescent health; DB has a long standing research interest in the economy of the school health and human capital; ES, KaiaE, SD, KatrinE, and CN led a body of work on nutrition policies and practices within UN agencies, and RG has studied and published on the epidemiology of adolescent health and trends in health related behaviours among adolescents. VB conceived the idea, drafted the initial version of the paper and revisited subsequent drafts; GP contributed to shaping the outline and drafting the paper; DB drafted the contents related to the investment case; RG ensured the accuracy of data related to health statistics; all authors revisited drafts critically and approved the final version of the manuscript. The authors alone are responsible for the views expressed and they do not necessarily represent the views, decisions, or policies of WHO, Unicef, or Unesco.

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