

Background Paper 4

Good health and optimum nutrition in adolescence

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Abstract

Good health and optimum nutrition extends from the absence of disease and malnutrition to the capacity to cope well with daily tasks and maintain functioning in the face of adversity. Adolescent health and nutrition are increasingly linked to social and structural determinants including climate change, globalization, urbanization, and technical development that drive changing lifestyles. For this reason effective health responses are often multilevel and multi-component with coordination across sectors. They include population-based policies to address the drivers of major disease burden in adolescents (e.g. road safety measures, interventions to address water, improved sanitation facilities and hygiene practices) and programmes targeting adolescents and school-age children in education settings (e.g. health promoting schools). Some of the greatest gains can be achieved by supporting adolescents in families facing disadvantage and discrimination and otherwise marginalised groups of young people. Health sector responses should focus on strengthening health systems to deliver on a subset of conditions that are sensitive to timely interventions by health services, such as mental health problems, sexual and reproductive health needs, malnutrition and communicable diseases. Multilevel responses to adolescent health and nutrition can be enacted through a national coordination platform to oversee efforts across sectors and government ministries. Ideally the sectors of health, education, social protection would have focal points for adolescent health and nutrition guaranteeing dedicated attention within each sector. Accountability mechanisms such as child and adolescent impact assessments, scorecards or dashboards to assess the effects on well-being should accompany a national vision for child and adolescent well-being and include measures for good health and optimum nutrition. Adolescent leadership and participation should be institutionalized and actively supported during the design, implementation, monitoring and evaluation of adolescent health.

Introduction

Much progress has been made in the past two decades in understanding the importance of adolescent health and nutrition for achieving human potential. Investment in adolescents aged 10-19 years delivers a “triple dividend” – improving health and well-being now, enhancing it throughout the life course and contributing to the health of future generations.^{1,2,3} Healthy adolescents fuel economic growth by contributing to increased productivity, reduced health expenditure, and the interruption of intergenerational cycles of poor health, poverty and discrimination. For every dollar invested in adolescent health, there is an estimated ten-fold health, social and economic return.⁴

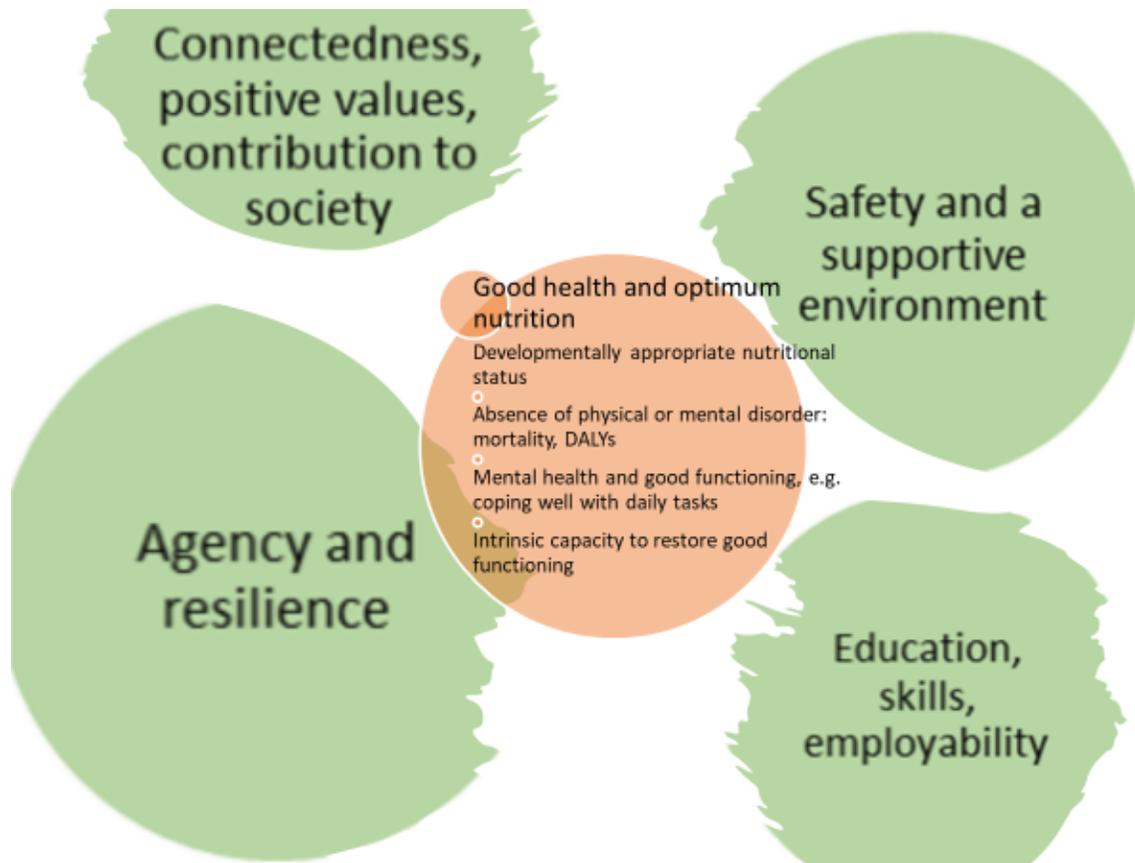
Despite the promise of returns on investment, adolescent health has attracted little investment from governments. Adolescents carry 11 percent of the global disease burden yet they received only 1.6 percent of development assistance for health through to 2015.⁵ Unlike children under five, where substantial investments and improvements have been seen since 1990, many indicators of adolescent health have not improved.⁶ Deaths in older adolescents (15-19 years), compounded by the emergence of new clusters of risk factors, are now greater than for 1 to 4 year olds in a growing number of countries.⁷

In 2019, the Partnership for Maternal, Newborn & Child Health, the WHO and other partners defined adolescent well-being as having five interconnected domains including good health and optimum nutrition (Figure 1).⁸ The aim of this paper is to articulate what good health and optimum nutrition means in the context of adolescent well-being, to describe key global changes that will shape the health and nutrition of the largest cohort ever of 1.2 billion adolescents, and to summarize key policy and programmatic responses.

Good health and optimum nutrition within the broader context of adolescent well-being

Good health and optimum nutrition includes, but is not limited to, the absence of disease and infirmity (Figure 1). Its positive dimension is defined as the capacity of the individual to cope well with daily tasks and access resources to maintain and restore health and good functioning in the face of adversity. These capacities are inseparable from other domains of well-being that are both determinants and results of health and nutrition. For example, health literacy is the result of good education and a determinant of good health, which in turn is a determinant of good academic achievement.⁹ Equally important for an integrated understanding of health and nutrition is the fact that risk factors for health problems belong to more than just one domain. For example, for mental well-being seven clusters of risk factors have been identified including substance use and early sex, low social support, insufficient nutrition, bullying, sugary foods and drinks, physical health risk, and problematic social media use.¹⁰ Adolescents themselves report that well-being is a multi-dimensional concept that encompasses the totality of their experience.¹¹ Thus adolescent programmes should take into account the interconnectedness between good health and other well-being domains.

Figure 1.
Good health and optimum nutrition within a broader context of adolescent well-being



This framing reinforces the importance of different sectors coming together to address good health and optimum nutrition in adolescents, an imperative that becomes even more apparent when analyzing global forces that influence the health and nutrition of the world's 1.2 billion adolescents.

Global forces shaping the health and nutrition of the largest-ever cohort of adolescents

Powerful social, developmental and structural changes are shaping the health and nutrition of adolescents in the 21st century. Demographic shifts have increased global inequalities in adolescent health.⁶ Earlier onset of puberty, delays in marriage and parenthood and evolving norms of femininity and masculinity have profound implications for mental and sexual and reproductive health.^{12,13} Changes in global food systems due to climate change, urbanization and globalization create new conditions for the global 'nutrition transition' from traditional to modern diets, with a triple burden of malnutrition in adolescents – undernutrition, hidden hunger and overweight.^{14,15} Increased collective violence and armed conflict in some parts of the world inflict tremendous harm on adolescent health and development due to internal displacement,

migration, malnourishment, and psychological trauma.¹⁶ While greater connectivity offers tremendous opportunities for social activism and education, screen media exposure is also associated with obesity in children and adolescents that is mediated by insufficient physical activity, poor sleep quality, and increased calorie intake.¹⁷ The long-term consequences on mental health of new ways of information processing during a formative period of brain maturation will need to be better understood. A revolution in job markets has implications for future job seekers' preparedness to cope with new stressors and compete in a rapidly changing work environment.^{9,18} Health and educational systems need to undertake structural changes so that they are equipped to provide adolescents and youth with the adaptive capacity to cope with new stressors, develop problem-solving skills and entrepreneurial mindset they will need in the changing work environment.¹⁸ Increased motorization without adequate road safety infrastructure puts millions of adolescents in low- and middle income countries (LMIC) at risk of death from road traffic injuries.^{6,19}

Notwithstanding that future costs for not addressing these forces will be exponentially higher due to intergenerational multiplication of risks, it is worth considering that societies are already bearing enormous costs related to adolescent morbidity and mortality.^{20,21} An estimated 70 percent of preventable deaths from non-communicable diseases in adults have been linked to health risks and behaviours commonly established in adolescence, including tobacco, alcohol and illicit drug use, physical inactivity, and unhealthy diets.²² Today, 250 million more adolescents than in 1990 are growing up in a context of multiple disease burden.⁶ Mortality and disability-adjusted life years lost due to road traffic injuries – the leading cause of deaths in adolescence in 2016 – are not declining.^{6,19} Malnutrition, exacerbated by the transition to “Westernized” diets, has led to an increase of 176.9 million more overweight or obese adolescents in less than three decades.^{6,23,24} And yet nutrition has a profound impact on the current and future health of adolescents. Access to a healthy diet within an enabling food environment during adolescence contributes to the development of healthy food preferences, and may limit unhealthy eating habits contributing to the epidemic of noncommunicable diseases in adulthood.²³ Lifelong health advantages and risks in nutritional quality have been linked to better height and BMI trajectories over age and time.²⁵ Almost every fifth adolescent globally has anaemia, an increase of 74.2 million since 1990.⁶ Child marriage remains common, with an estimated 66 million women aged 20–24 years married before the age of 18 years. Despite an overall increase in the demand for contraception satisfied with modern methods in females aged 15–24 years, unmet need increased from 68.4 million (45%) in 1990 to 73.1 million (33%) in 2016 as a result of demographic change.⁶ Driven among other factors by harmful gender norms, gender-based violence, poverty, early and child marriage, lack of comprehensive sexuality education and low use of condoms, five in six new HIV infections in sub-Saharan Africa are among girls aged 15-19.²⁶ As a result of these trends and barriers to access care, complications from pregnancy and childbirth remain among the leading causes of death for 15-19 year-old girls globally, with striking regional differences.²⁷

Despite progress in some areas,²⁸ gender inequalities persist. Adolescent girls have less access to secondary education in many countries,²⁹ bear the consequences of unequal food allocation and have greater malnutrition,³⁰ are at higher risk of gender-based violence, insufficient physical

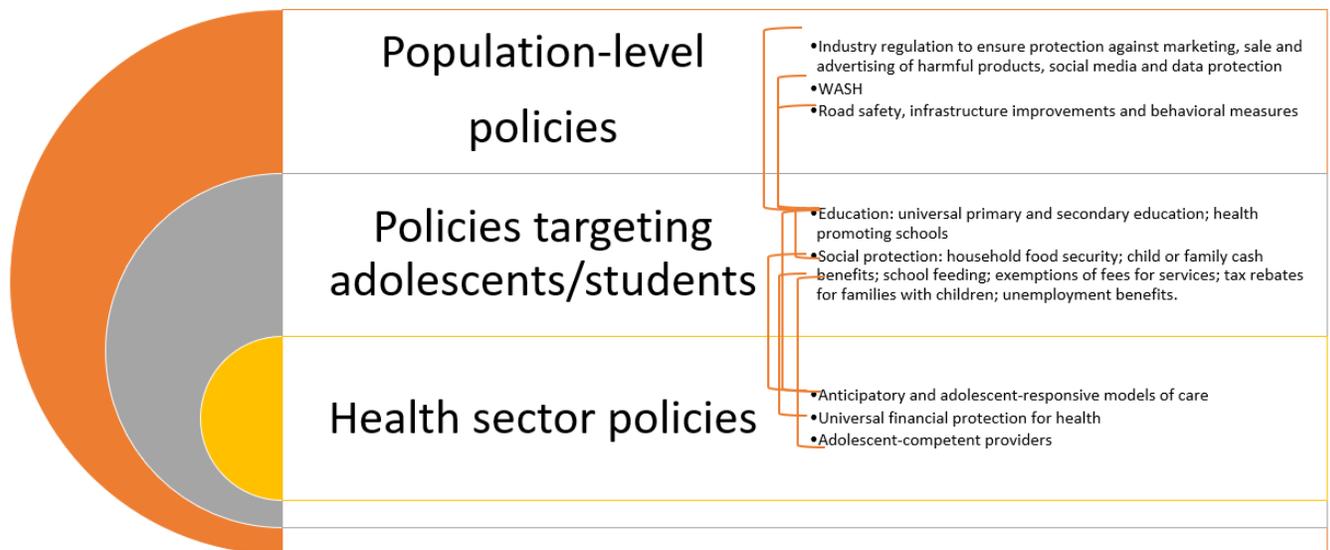
activity³¹ and self-harm.²⁹ Compared with girls, adolescent boys have excess all-cause mortality and substantially higher mortality due to unintentional injury, interpersonal violence, alcohol and other psychoactive substances, suicide, and a higher prevalence of harmful drinking and tobacco smoking.²⁹ Largely a consequence of societal norms for gender roles, these negative health impacts cannot be addressed without tackling the legal, social and economic distribution of power.

Despite evidence from neuroscience that adolescence provides a unique window of opportunity to shape neurodevelopment, early intervention in this age group is largely absent.³² In all ages the brain is a highly open and modifiable system whose structure and function reflect, at any given time, both the legacy of the genome and the environment. Neuronal circuits, established early in life, undergo remodeling as they develop their adult functional properties in response to both genomic and environmental cues. But in adolescence processes that lead to an increasingly efficient functioning within and across brain networks peak.³³ Importantly, this coincides with the period when, for the first time since childhood, adolescents can decide independently of the adults around them what to eat and how much, whether to do regular sports or sit all day in front of a tablet, whether or not to try psychoactive substances. It means that we have opportunities to shape environmental contexts for adolescents, including through educational systems, public health policies and specific intervention programs, that have the potential to encode healthy lifestyles into the brain's functional networks and their systems. The challenge is to design policies that will make healthy choices easy, and unhealthy choices difficult, expensive or inaccessible.

Policy response

No single sector can address the complexity of causes of poor health and nutrition in adolescents. Given the clear links with other domains of well-being, the most powerful actions for adolescent health and nutrition are intersectoral, multilevel, and multi-component.^{1,2} The WHO guidance Accelerated Action for the Health of Adolescents summarizes all policies and interventions in each of the key sectors – education, social protection, criminal justice, housing, agriculture, energy, telecommunications, and transport - that contribute to adolescent health.¹ Hereafter we focus on a limited number of policies that are likely to bring the biggest gains because they either (i) directly address the main causes of deaths, ill-health and risk factors in adolescents (e.g. policies that address road traffic injuries) and/or (ii) concomitantly address clusters of risk factors and have multiple and synergistic positive associations with adolescent health outcomes across well-being domains (e.g. education policies) (Figure 2). We describe these policies in three broad categories. First, are the population-level policies and regulations that include universal approaches benefitting the entire population including adolescents. Second, are sector-specific policies that target adolescents, school-age children and families. These are led by the education and social protection sectors. Finally, health sector policies, while universal in nature, have adolescent specific considerations, which we focus on in this paper. Even if a policy is led by one sector, its intersectoral nature is emphasized by the arrows (e.g. cash transfer policies implemented in collaboration with the education sector).

Figure 2



Population-level policies

Adolescent disease burden is increasingly determined by changing lifestyles, globalization, urbanization, technological development, and climate change.² This highlights the importance of creating safe and supportive environments,³⁴ and investing in population prevention efforts from which adolescents and young people will benefit.

High adolescent mortality from road traffic injuries calls for greater attention, especially in LMICs.³⁴ There are impressive benefit cost ratios that accrue from a suite of interventions around **road safety, infrastructure improvements and behavioral measures** (e.g. helmets, seat belts, alcohol control, speed limits, and graduated licensing systems) with a 7-10-fold return on investment.³⁵

Unregulated industry can jeopardize children's health and well-being. Digital technology has come to be central to the lives of adolescents in many places but alongside with benefits brings exposure to risks from misleading marketing, bullying, gambling, and online grooming.³⁶ For these reasons there have been calls **for stronger and more comprehensive approaches to industry regulation** in areas such as digital media, advertisement and sales.³⁷ Greater government control is needed to put well-being ahead of commercial interests and protect children from the harmful marketing, promotion, sales and sponsorship of tobacco, alcohol, breastmilk substitutes, unhealthy snacks and foods and sugar-sweetened beverages, gambling, potentially damaging social media, and the inappropriate use of personal data.³⁶ At the global level, the adoption by the UN General Assembly of an Optional Protocol to the CRC has been proposed to protect children and adolescents from industries' marketing that exploit their developmental vulnerability.³⁷

Safe drinking-water, improved sanitation facilities and hygiene practices (WASH) bring both reductions in infectious diseases and improvements in nutrition and well-being.^{38,39} Despite recent declines in attributable mortality, inadequate WASH remains an important determinant of global and adolescent disease burden.⁴⁰ A broad public health approach to WASH brings

multiple health benefits through the expansion of access to safe drinking-water and sanitation, integrating household interventions, promotion of good personal and domestic hygiene and the early incorporation of health considerations in the planning and design of water resources.^{41,42} Within this broad public health response, sector-specific actions should be implemented in schools and other educational facilities to become model institutions in providing sustained access to safe drinking-water, sanitation, and hygiene.^{42,43}

Notwithstanding population-level policies described above, for good health and optimum nutrition three sectors play a decisive role: education, social protection and health.

Policies targeting adolescents and students

Education policies

The education sector is the primary system for investing in children and adolescents in most countries.⁴⁴ In the education sector, two policies contribute in an integrated way to each aspect of well-being – universal access to education, and health promoting education systems and schools.⁹

Education is an important determinant of health and human capital, and the reciprocal links between education, health and nutrition are well documented.^{45,46,47,48} The progress made since 2000 in primary and secondary education offers an unparalleled opportunity to reach adolescents through the education system more than ever before. Notwithstanding the overall progress, in low-income countries nearly 30% of the poorest children aged 12–14 years never attended school at all, and over one-fifth of all young people aged 15–24 years old in the world are neither employed nor in education or training (NEET) with young women being more than twice as likely as young men to be NEET.⁴⁹ The consequences are not trivial. Being NEET is associated with higher mortality, hospitalization, and poor mental health, such as depression and anxiety. Investing in universal access to primary and secondary education is thus one of the most powerful interventions for adolescent health.⁴

But schools provide much more than just literacy and numeracy, a truth that came to the spotlight at the peak of the COVID-19 pandemic, when 1.5 billion children and adolescents were out of school and missed meals, essential information and services.⁴⁴ Children and adolescents spend an average of 7,590 hours in the classroom over 8–10 years during primary and lower secondary school.⁴⁴ This prolonged contact leaves schools with a unique opportunity to contribute to well-being in each of its dimensions. Education helps students to develop both cognitive skills and socioemotional skills,^{44,50} offers a safe learning environment where all students feel included, provides comprehensive life-skills and sexuality education,⁹ and offers services for a range of conditions, including anxiety and depression, behavioural disorders, diabetes, overweight, obesity and undernutrition.^{23,51,52,53}

A school that achieves all the above is called a health promoting school.^{54,55,56} Health-Promoting Schools have been recognized as a strategic vehicle to promote positive development and healthy behaviours such as healthy diets, physical activity, recreation and play, and reduce tobacco use and bullying. To truly integrate health and health promotion, education systems must take a whole-school approach to health promotion integrated 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 and UNESCO have

promoted this approach for decades, however, many initiatives focused on making local changes in pilot schools, without having the design or the power to make systemic changes at the national or subnational level.⁵⁶ To address this issue, WHO and UNESCO plan to publish the Global Standards for Health-Promoting Schools in early 2021 that will provide a clear framework towards health promoting education systems and towards realizing the vision of Making Every School a Health-Promoting School.^{54,56}

Social protection policies

Whereas the effect of policies on all adolescents is important, some of the greatest gains can be achieved by supporting adolescents living in poorer families and marginalised populations. This is especially true in times of crisis, as seen during the COVID-19 pandemic, that highlighted the pivotal role of social protection in addressing and mitigating the impact of health crises.⁵⁷ Social protection policies that have a gender transformative lens and aim to ensure free education and primary health care at the point of delivery, and access to healthy and safe diets will have a positive impact across a range of conditions and risk factors including nutrition, AIDS, tuberculosis, mental health and substance abuse, sexual and reproductive health and violence.^{37,58} In LMICs in particular, many older adolescents are young parents will benefit from social protection initiatives such as child or family cash benefits.⁵⁵ Adolescents may be less protected in a food insecure household than younger children. For these reasons interventions to ensure household food security such as welfare support programs, cash transfers, school feeding and investment into provision of low-cost healthy food will preferentially benefit adolescents.⁵⁹

Health sector policies

Health expenditures tend to be disproportionately skewed toward adults and the elderly.⁶⁰ Across countries health spending on children and adolescents aged 5 to 19 years varies from 6.7 to 8.1 percent of total health spending, despite this group accounting for 15 to 19.1 percent of the population.⁶¹ Yet in adolescence, health services have an important role to play in addressing a subset of conditions that have a large contribution to adolescent disease burden *and* are sensitive to timely interventions by health services, such as mental health conditions, sexual and reproductive health needs, malnutrition and communicable diseases. Investments are needed to build adolescent responsive health systems with a focus on regulations addressing adolescent evolving capacity and autonomy, anticipatory models of care, adolescent competent providers, adolescent protective financial policies and adolescent-responsive health information systems.^{62,63,64,65}

Given the spectrum of new experiences in adolescence that may pose risks to health, adolescents need **anticipatory models of care** that can effectively detect and address these risks within an adolescent's everyday context.⁶² A model of system-initiated contacts, e.g. scheduled health visits, unlike in children and pregnant women, is not established for adolescents.⁶⁶ To this end, strengthening the capacity of universal platforms, such as primary care services, school health services⁵³ and other community based systems, is a priority. Regardless of the model of care, services should adhere to quality standards, developed in consultation with adolescents,^{64,67} and supported by consent and assent regulations and procedures that uphold adolescents' rights to safety, autonomy and self-determination, in line with their evolving capacity.^{1,68}

To respond to the needs of harder to reach populations, differentiated models of care should be developed.⁶⁹

Information technologies allow adolescents' access to e-health and mobile health, especially for those living in geographically isolated communities. Teleconsultations and chatbots have the opportunity to promote greater access to health care for the geographically isolated, reduce the indirect costs associated with consultations, enhance equity and achieve greater health efficiency. Guidelines from professional associations and international agencies on teleconsultations should address the specific needs of adolescents.⁷⁰

Unlike maternal health with obstetricians, gynecologists and midwives, or child health, where nurses, general practitioners and pediatricians have specialist training, in too many countries professional leadership in adolescent health care is absent.^{49,62,65} Initially focused on the very young, over time, the discipline of paediatrics has extended towards adolescence and even young adulthood, without corresponding effort in delivering training on adolescent responsive health care,⁷¹ and putting in place sustainable continuous professional education.¹ It is important therefore that competency-based education in adolescent health-care is available, and mandated in both pre-service curricula and postgraduate education of health care professionals.^{1,65,71,72}

While addressing core competencies is important, policies should address as well structural barriers to provide adolescent-responsive care by introducing providers payment mechanisms that motivate health workers to deliver care aligned with standards,¹ and by using innovations such as pre-visit electronic multidomain psychosocial screening tools that help professionals to overcome time constraints and detect and prioritize potentially problematic issues before the clinical consultation.⁷³

Financial barriers are a hindrance to care among adolescents and young adults in many countries.^{1,49,74} Older adolescents and young adults have the poorest insurance levels, compared with children and adults older than 24 years old.^{74,75} It is therefore important to maximize the number of adolescents covered by an effective prepaid pooling arrangement. This can take different forms, e.g. an explicit insurance programme, access to facilities that are financed by prepaid pooled funds, or adequate subsidization for vulnerable adolescents and their families via cash transfer and other social protection schemes.^{1,77}

National health management and information systems rarely capture data specific to adolescents.¹ It is important therefore to identify and respond to specific weaknesses in national data collection systems, including a review of sources and mechanisms for data collection on impact, outcome, output, process and input indicators.

Governance for better health and optimum nutrition

Limited progress in adolescent health and nutrition in recent decades is the result of lack of ongoing, dedicated attention to adolescent health, and a failure to cooperate between sectors.³⁷

Two avenues present opportunities for sustained attention to adolescent health and nutrition within government. Establishing a national coordination platform to oversee efforts for adolescent well-being across sectors and ministries could support an “Adolescent Health in All Policies (AHiAP)” approach to policy formulation, implementation, monitoring and evaluation.¹ A national child and adolescent well-being strategy including health and nutrition among its

priorities might be a mechanism to achieve AHiAP. A national vision for child and adolescent well-being will benefit if it is accompanied by accountability mechanisms such as child impact assessments, child scorecards or dashboards to assess the effects on children's well-being, with clear measures for good health and optimum nutrition.³⁷ One can argue that progress towards the realization of good health and optimum nutrition for all might become an important measure of the strength of the national institutions. Accountability shall be reflected also in how adolescent health and nutrition is prioritized in the national budgets, and innovative financing mechanisms could be explored to sustain investments.⁷⁸

A second complementary approach would be to appoint an adolescent health and nutrition focal point within the sectors of health, education, social protection, to guarantee ongoing and dedicated attention to adolescents within each sector's policies.¹ In schools, health should be represented within the senior leadership team, either by including school nurses or healthcare officials, or by designating responsibility for health and nutrition to a specific member of the team.⁴⁴ In the health sector, the adolescent health focal point would ensure that all health systems functions, including financial protection, workforce capacity, quality of care, and HMIS, address the needs of adolescents.

It is important that adolescent leadership and participation is institutionalized and actively supported during the design, implementation, monitoring and evaluation of adolescent health programmes.¹ Building adolescent's agency and resilience, and removing barriers to youth participation, such as lack of access to and control of financial and other resources, or unfavourable social and institutional norms, will also be essential.^{11,79}

Better, and different, advocacy is also needed. Framed in purely health terms, the investment arguments have not yet captured sufficient policy attention. We need to more clearly articulate the longer-term economic consequences of inaction. Today, adolescent health is central to other considerations such as ageing society. The resulting pension reforms, dominated by measures to raise the retirement age,⁸⁰ are relying on the ability of the current largest generation ever of adolescents to be healthy to productively work into increasingly older age. Limited capacity due to health problems will also affect the participation in the labour market of younger adults.⁴⁹ In addition, the epidemic of obesity and mental health problems in children and adolescents will compromise via intergenerational transmission of risks the ability of future generations to thrive, thus limiting their capacity to productively contribute to economies and potentially increasing the costs for long term care. Today's adolescents will, in fact, be the largest generation to parent, presenting unparalleled opportunities to enhance human capital for coming generations.

Conclusion

Good health and optimum nutrition is intrinsically linked with other aspects of well-being such as connectedness, education, life-skills and employability, safe and supportive environments, agency and resilience. Thus greatest gains for good health and optimum nutrition can be achieved by investing in programmes that take into account the interconnectedness between well-being domains. The response should include policies that directly address the main causes of deaths, ill-health and risk factors in adolescents (e.g. population level policies such as WASH and road safety), as well as policies that target adolescents and school-age children in education

settings and concomitantly address clusters of risk factors across well-being domains (e.g. education, health promoting schools, social protection). Better governance and greater accountability is needed for the realization of good health and optimum nutrition as a fundamental human right.

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