Improving adolescent health: an evidence-based call to action

Adolescent health is coming of age, with the number of young people aged 10–24 years at an all-time high globally and projected to increase in the coming decades.[1] The greatest increase will be in low-income countries where there have been remarkable decreases in the under-5 mortality and child mortality rates, but where fertility often remains high.[2]

Health indicators often focus on burdens of disease or mortality; however, indicators for health and wellbeing in adolescents need to focus on morbidity and risk behaviours. This broadened scope is necessary because several key health conditions,[3–6] including over half of mental health disorders,[7] and risk factors for morbidity and mortality in later life start in adolescence, such as tobacco and alcohol use, unhealthy diet, lack of physical activity, or risky sexual behaviours, and many have social determinants.[4,8]

In *The Lancet*, Peter S Azzopardi and colleagues[9] report country-level estimates of 12 headline indicators from the *Lancet* Commission on adolescent health and wellbeing[10] from 1990 to 2016, and discuss the current and future health and wellbeing of adolescents. Data were provided for almost all countries and territories using data from the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2016 and other datasets. The authors focus on three aspects of current and future adolescent health: health outcomes (ie, communicable, maternal, and nutritional diseases [group 1 conditions]; injuries; and non-communicable diseases); health risks (tobacco smoking, binge alcohol use, overweight, and anaemia); and social determinants of health (fertility; secondary education; not in education, employment, or training [NEET]; child marriage; and satisfaction of demand for contraception with modern methods).

The data illustrate the changes in adolescent health and wellbeing from 1990 to 2016, with two prominent aspects being clearly shown: the demographic transition, with an increase in the number of adolescents (aged 10–24 years) from 1·53 billion in 1990 to 1·8 billion in 2016; and the epidemiological transition, which has seen a decrease in the number of countries classified as multiburden countries. In multiburden countries, characterised by a high degree of poverty, adolescents face a heavy and complex burden of diseases including group 1 conditions, injuries, and non-communicable diseases. Notably, a substantial increase was seen in the number of countries classified as non-communicable disease predominant (those with relatively low rates of both group 1 conditions and injuries). The demographic transition means that, although fewer countries are classified as multiburden, these countries were home to an additional 250 million young people in 2016 compared with 1990. Young people living in these countries (which are largely in sub-Saharan Africa and south Asia) face not only the highest burden of communicable diseases but also of non-communicable diseases globally. In particular, young women in multiburden countries are being left behind. Young women tend to have worse health outcomes than men in the same multiburden countries, and compared with males and females in other country groups, these women have the largest increases in risky behaviours (including tobacco smoking, binge drinking, and the prevalence of overweight or obesity); the highest prevalences of anaemia, NEET, adolescent livebirths, and child marriage; and the lowest prevalences of secondary education completion and demand for modern contraceptive need being met. Additionally, non-communicable diseases caused more disability-adjusted life-years (DALYs) than group 1 conditions in multiburden countries for both sexes. For example, over half of DALYs for females in these countries were

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related to non-communicable diseases (8259·2 [51%] of 16 071·4 DALYs per 100 000 population) compared with 39% (6334·5 DALYs per 100 000) due to group 1 conditions, and 9% (1477·7 DALYs per 100 000) due to injuries. This finding, alongside the increases in risky behaviours in this age group, is likely to cause non-communicable diseases in later life.

The data used in this study raise questions that are not addressed in the current Article. For example, the authors identified only four multimorbidity countries, all in southern Africa (Lesotho, South Africa, Swaziland, and Zimbabwe), with increases in group 1 conditions between 1990 and 2016. This finding might be driven by the high prevalence of HIV infection. Further disaggregation by age is also needed because causes of morbidity and risky behaviours among adolescents aged 10–15 years are different from those for adolescents aged 20–24 years. As with any synthesis, the quality of the data depends on the primary data collected, and ten of the 12 indicators were populated using modelled data, with wide uncertainty estimates indicating the lack of primary data, especially for binge drinking, child marriage, and injuries associated with conflict and war. Nonetheless, the Article is based on data with far higher coverage than previous estimates.[11]

This study is an evidence-based call to action to the global health community in several ways. First, the 12 indicators defined in the *Lancet* Commission[10] and populated in this Article[9] identify important health outcomes, health risks, and social determinants of health that should be targets of policy and programming. These clearly defined indicators are aligned with the framework for the Sustainable Development Goals and with current global policy documents from UN agencies and major funders, such as the Global Strategy for Women's, Children's and Adolescents' Health (2016–30) with the Survive, Thrive, Transform agenda[12] focusing on longer-term health and wellbeing for adolescents. These indicators can be used systematically in future studies to advocate for measuring and reporting the needs of adolescents globally. Second, the Article highlights the need to focus on screening, counselling, and treating adolescents for common morbidities and risk behaviours that can affect current and future health and wellbeing. The multimorbidity seen in

all settings calls for a shift away from focusing on single health problems in adolescent health care and research, and instead focusing on strategies to improve prevention, diagnosis, treatment, and referral in integrated adolescent health programmes. For example, a strong theoretical case has been made that health check-up visits, similar to the check-up visits for infants and younger children, in which adolescents are screened for multiple conditions and risk behaviours could be highly cost-effective in low-income and middle-income countries;[2] empirical evidence of the effectiveness of such visits is urgently needed.[13,14] Finally, the study illustrates the crucial need for intersectoral strategies—particularly, investment not only in health but also in educational, economic, and social sectors to promote and protect the health and wellbeing of current adolescents, future adults, and their children.

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Shedding light on a million annual deaths in mid-childhood

Premature mortality remains a potent catalyst for health action. For children younger than 5 years, it has been the major driver of policy and programming for the past two decades.[1] By contrast, deaths in older children and younger adolescents have been generally considered relatively low in numbers and have been largely overlooked.[2] More recent efforts to document patterns of death in 10–14-year-olds have proven challenging, largely because global data systems have focused on other age groups, reflecting earlier policy priorities. The result has been weak primary data at a time of life when patterns of death change markedly with the growth of the individual child.[3] Recent efforts from the UN Interagency Group for Child Mortality Estimation suggested that nearly 1 million 5–14-year-olds die each year, constituting a substantial minority of all childhood and adolescent deaths.[4] This understanding has brought calls for a better grasp of the causes of death in middle childhood.[5] Major causes of early childhood death, such as pneumonia and diarrhoea, are recognised to continue into later childhood, whereas deaths due to predominantly adolescent and adult causes, such as injury and maternal causes, emerge from puberty.[6] These shifting patterns of death have different determinants and require different responses. In this context, data on causes of death at different ages are essential for driving effective policy and programme responses.

In *The Lancet*, Shaza Fadel and colleagues' analysis[7] of data on 244 401 deaths in children aged 5–14 years from nationally representative mortality studies provides important insights into causes of death across these middle years of childhood for four populous middle-income countries. India stands out with its continuing high rates of child deaths from communicable or nutritional diseases, with about 74 000 deaths in 2016, more than half of which were caused by diarrhoea, malaria, and pneumonia. These deaths constitute just under half of 160 000 all-cause deaths in India among children aged 5–14 years[8]—a fraction much higher than that in China, Brazil, and Mexico. Injury rates, including drowning and traffic accidents for boys and drowning for girls, also remained high, leading to about 47 000 deaths in India in 2016. China has continued to make great progress around communicable diseases, but road traffic injuries and drowning together with non-communicable diseases now stand out as priorities, comprising nearly 80% of deaths in children aged 5–14 years in 2016.[7] For both Brazil and Mexico, non-communicable diseases are now the predominant cause of death, although excess injury deaths in younger adolescent males contribute to marked gender differences in mortality.

Fadel and colleagues' study represents an important step forwards while also highlighting the challenges ahead in collecting the data needed to set policy and research priorities and monitor change. The authors were unable to include any high-burden countries because of their poor data quality. Sub-Saharan Africa now accounts for more than half of all deaths in 5–14-year-olds, a proportion that will grow in the coming decades

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