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## Adolescent health in the 21st century



Several factors have contributed to the social construct of adolescence as a distinct period of life, including the rise in education (and with it age segregation), social media, and urbanisation.<sup>1</sup> But adolescence also has a biological basis. Many of the behaviours we associate with the teenage years (eg, risk taking) are evident in other species,<sup>2</sup> and we know that brain maturation in human beings is not complete until about age 25 years. As young people enter adolescence they bring with them resources and vulnerabilities, both biological (genetics, epigenetics, natural endowments) and environmental (national and local policies, as well as community, school, workplace, peers, neighbourhood, and family influences). Consequently, an ecological or life-course framework is crucial to understanding adolescent trajectories (figure).<sup>3</sup>

In high-income countries and, increasingly, low-income and middle-income countries, birth rates have declined while child survival has increased. Hence, there is a larger cohort of adolescents and young people today (just under 2 billion) than ever before, of whom 86% live in low-income and middle-income countries.<sup>4</sup> This should mean that healthier young people are coming of age and entering the workforce, adding to a nation's wealth. However, in many low-income and middle-income countries this dividend has yet to be realised. Impeding this realisation are factors that include disparities in access to resources and services by ethnic origin, region of residence, socioeconomic status, and sex. Furthermore, as young people migrate to urban centres seeking often unavailable education and work, there is a growing population of disenfranchised young people adding to, rather than alleviating, the economic and social burdens.<sup>5</sup>

Today's young people are growing up in contexts of rapid urbanisation, increased educational demands, globalisation, and increased access to worldwide infor-

mation through the internet and social media. Urbanisation is predominantly a feature of low-income and middle-income countries, and disproportionately it is young people who are migrating to urban centres. However, unless there are radical improvements in urban governance and investments, most migrants will

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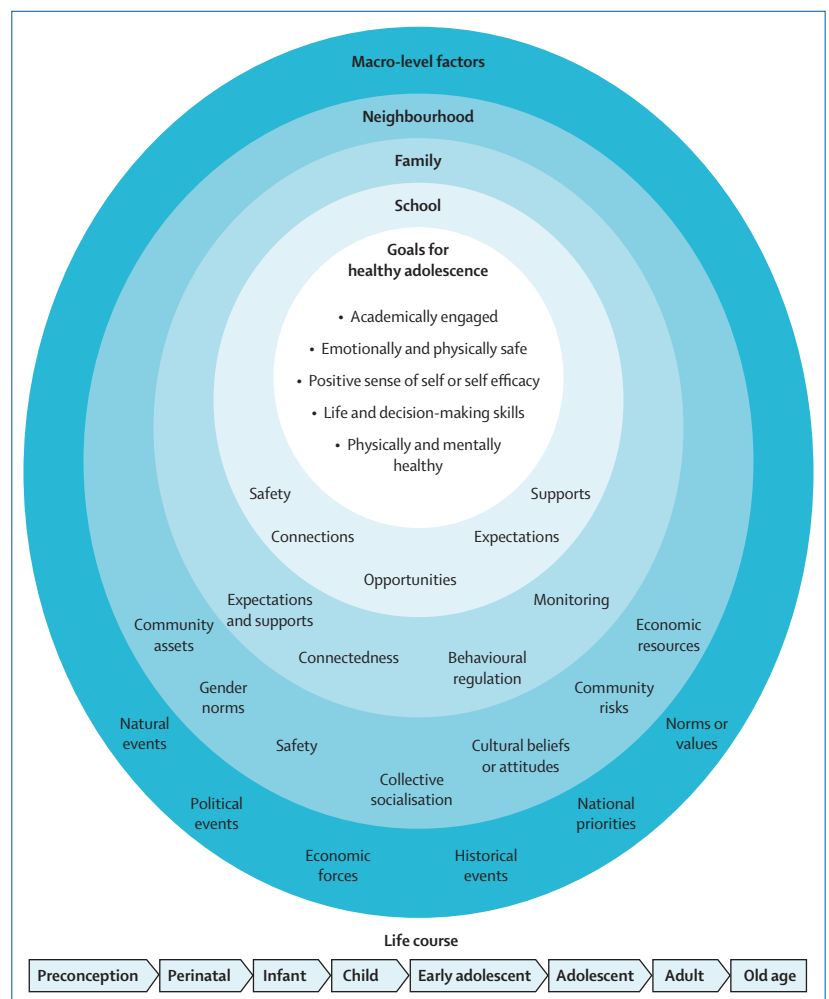


Figure: An ecological framework for adolescent health

be living in resource-poor informal settlements at the periphery of urban centres, creating communities of intractable poverty and pervasive crime.<sup>6</sup>

Although there have been great advances in education worldwide, millions of young people in low-income and middle-income countries do not have access to formal education.<sup>7</sup> Low educational participation is associated with poor health and diminished likelihood of sustainable development.<sup>8</sup> Furthermore, there are wide disparities in access to education between urban and rural regions and across socioeconomic groups.<sup>7,9</sup> With restricted education many young people prematurely enter the labour force in the informal economy, where they are at high risk of exploitation.<sup>6</sup> Globalisation needs an educated workforce; without access to education large segments of the developing world will increasingly be disadvantaged.<sup>10</sup> As is true for education, access to the internet and social media disproportionately provides advantages to young people in urban, higher-income settings.<sup>7,9</sup> Although new media has many positive benefits, it also poses threats by making illicit materials more available, and challenging social structures by widening the gap between generations.<sup>11,12</sup>

In 1971, the concept of epidemiological transitions in public health was described as a shift from infectious to chronic conditions.<sup>13</sup> Although there has been a rise in chronic disorders in young people over the past 20 years, some of the most pressing problems of our age have challenged this view. Of great concern are sexually transmitted infections with a protracted or indefinite course (eg, infections with HIV, herpesvirus, or human papillomavirus), which in countries of all incomes are exacerbated by poverty and social inequalities.<sup>14</sup> Furthermore, many of the chronic disorders thought in 1971 uniquely to characterise high-income countries are being identified with greater prevalence in low-income and middle-income countries. For example, there are increases in mental disorders, suicide, homicide, obesity, malnutrition, and precancerous cervical lesions in young people worldwide.<sup>7</sup> Unhealthy behaviours combine with unhealthy environments to offset the improved health status achieved by controlling previously fatal infectious diseases.

The unique contexts in which many young people in low-income and middle-income countries are developing necessitate a deeper understanding of the issues affecting their health and wellbeing. The state of knowledge of adolescent health outside high-income countries

is restricted, indeed often restricted to sexual and reproductive health, and the information needed to develop effective interventions is commonly unavailable.<sup>15</sup> Priorities should include morbidity data beyond sexual and reproductive health; adolescent social, behavioural, and developmental research; an expanded focus on early adolescents (age 10–14 years) and longitudinal research; and a greater understanding of the aspirations and concerns of young people. Finally, enhancing the research capacity of investigators in low-income and middle-income countries is crucial if these regions are to develop effective evidence-based policies and programmes to ensure the wellbeing of their young people.

\*Robert W Blum, Francisco I P M Bastos, Caroline W Kabiru, Linh C Le

Department of Population, Family and Reproductive Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 21205, USA (RWB); Oswaldo Cruz Foundation—FIOCRUZ, Rio de Janeiro, Brazil (FIPMB); African Population and Health Research Center, Urbanization and Wellbeing Research Programme, Nairobi, Kenya (CWK); and Department of Demography, Hanoi School of Public Health, Hanoi, Vietnam (LCL) rblum@jhsph.edu

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