The Economist INTELLIGENCE UNIT

Addressing non-communicable diseases in adolescence

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Contents

About this report

Addressing non-communicable diseases in adolescence is an Economist Intelligence Unit report, commissioned by AstraZeneca. It looks at the challenges of targeting non-communicable disease (NCD) prevention among the adolescent population, by looking at the disease burden within the 10-24 age group, as well as the main risk factors and impact of environmental dynamics.

The UN defines adolescents as persons aged 10-19 years and youth as those between 15- 24 years.[1] In this report we use the terms adolescence and youth interchangeably and generally refer to young people aged 10-24 years if not stated otherwise.

The findings of the report are based on an NCD scorecard that assesses how ten representative countries of different income levels are addressing the health challenges associated with NCDs and adolescence; additional desk research; and ten in-depth interviews with healthcare experts and those working with non-governmental organisations within the target group. Our thanks are due to the following for their time and insights (listed alphabetically):

- Shakira Choonara, public health expert, member of African Union Youth Advisory Council and One Young World Scholar, South Africa
- Alyssa Frampton, youth health advocate and public policy student, Canada
- Marie Hauerslev, chair-elect, NCD Child, and physician, Aarhus Universitetshospital, Denmark
- Laura Laski, senior adviser and freelance consultant, World Health Organisation and other UN organisations, and former head of sexual and reproductive health, UN Population Fund (UNFPA)
- Sania Nishtar, co-chair, World Health Organisation (WHO) High-Level Global Commission on NCDs, and founder, Heartfile
- Rachel Nugent, vice-president, Global NCDs, RTI International
- Stefan Peterson, chief of health, UNICEF
- Rodrigo Rodriguez-Fernandez, global medical director for NCDs, International SOS
- Susan Sawyer, director, Centre for Adolescent Health, Royal Children's Hospital, Melbourne, Australia, and professor of adolescent health, University of Melbourne
- Janis Whitlock, research scientist and associate director, Bronfenbrenner Center for Translational Research, Cornell
  University, US

The report was written by Andrea Chipman and edited by Martin Koehring of The Economist Intelligence Unit. The development of the scorecard was led by Elly Vaughan and Aditi Karnad from the EIU Healthcare team.

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[1] United Nations Population Fund, Adolescent and youth demographics: a brief overview, https://www.unfpa.org/sites/default/files/resource-pdf/One%20pager%20on%20youth%20demographics%20GF.pdf

Executive summary

The effort to combat non-communicable diseases (NCDs) is a big task facing governments and health policymakers, as these diseases put an increasing strain on the health budgets of developed countries and emerging markets alike.

"The biggest NCD challenge is that it has not been on the agenda at all," says Sania Nishtar, co-chair of the World Health Organisation (WHO) High-Level Global Commission on NCDs, and founder of Heartfile, a non-governmental organisation (NGO) based in Pakistan. She notes that this has been changing since 2015, with the introduction of the UN's Sustainable Development Goals (SDGs), which explicitly commit to a reduction in premature mortality from NCDs by a third by 2030. "Additional impetus has been lent by the two high-level summits on NCDs in 2011 and 2018."

Yet there has been little focus on adolescence, when the majority of behavioural risk factors for NCDs first emerge. Indeed, there are only a few explicit mentions of the 10-24 age group within the SDG targets.

The Economist Intelligence Unit has developed an NCD scorecard to assess how ten representative countries of different income levels are addressing the health challenges associated with NCDs and adolescence. The scorecard evaluates the countries according to three "baskets" covering national policies, national awareness campaigns and national strategies, with each basket further divided into a number of sub-indicators relating to individual NCD risk factors.

While most of the countries included in the scorecard have some level of policy in place to address the various NCD risk factors, there are significant gaps when it comes to implementing these plans into working strategies. This paper looks at some of the observations highlighted in the scorecard as well as other issues related to the risk factor categories and at some of the more successful ways countries are addressing them.

Key findings

- **Political will is half the battle.** Many low-income countries are doing well at addressing some of the risk factors for NCDs, despite their lack of financial resources. Both Ethiopia and India show progress on addressing tobacco use, and India scores well on the promotion of healthy diets. At the same time, wealthier countries such as Saudi Arabia and the US earn low to middling scores in many of the categories. In the case of the US, devolution of health policy to state and local governments plays a significant role in health promotion and performance and leads to inequality of policies across the country, which could contribute to the country's lower score. Political will on the part of national leaders and the initiation of projects that operate across a number of sectors—health, education and housing—are as likely a predictor of success as national income.

- **Policymaking should include young people.** In order to determine how best to talk with adolescents, young people need to have a seat at the policy table, and to be actively involved in establishing programmes and campaigns that will be directed at their peers. Examples of this happening in practice include Women

Deliver and the WHO's Youth Leaders Network. Mechanisms to effectively and authentically engage these youth advocates need to be put in place, so that they can represent the broad spectrum of their age group.

- **Multi-sector approaches to NCDs work best.** While standalone programmes can be useful for agenda-setting, efforts to confront NCDs in the adolescent population are most effective when they are embedded in a broad-based public health programme. In addition, initiatives need to go where young people find it easiest to access them, whether that is comprehensive wrap-around services at schools or in the community. Moldova, a low-income Eastern European country, has rolled out comprehensive adolescent health services that include physical and mental healthcare as well as sexual and reproductive healthcare.

- **More attention should be devoted to the social determinants of health (SDH).** The SDH are a key element of growing NCD rates. Addressing risk factors in adolescents will require governments to look at the entire environment young people are living in, including the food they eat, the areas they live in and the air they breathe. Finland has pioneered a Health in All Policies initiative over the past four decades, seeking to influence key determinants of health in close collaboration with the WHO. The interventions with the best evidence base for improving diets and reducing use of tobacco and alcohol in adolescence entail both taxation and regulation of sugar-sweetened beverages and high-fat food, restrictions on advertising, and imposition of age limits. A willingness for governments, NGOs and companies to work together as partners is crucial.

- **More data are needed.** Despite the amount of research done on the links between nutrition and obesity, the evidence for anti-obesity campaigns is still mixed. For other NCD risk factors, such as sexual and reproductive health and mental health, the data are even scarcer. Disaggregating data in individual age bands within the broader adolescent group could also help to pinpoint where the focus of different interventions should be. More demonstration projects will be necessary, and policymakers should look to best-practice interventions in one area for ideas that can be replicated elsewhere.

Introduction

Non-communicable diseases (NCDs) are, increasingly, the biggest health threat facing governments and healthcare systems worldwide, accounting for 16m premature deaths annually.[2] In the developed world, chronic illnesses, such as cardiovascular diseases, cancer, diabetes and chronic lung illnesses, are already taking the lion's share of healthcare investment.

Many low- and middle-income countries, meanwhile, are facing a double burden of disease, with healthcare systems continuing to combat a range of infectious diseases at the same time that they are reeling from an increase in NCDs among their populations.

NCDs make up more than 70% of all deaths globally, according to the World Health Organisation (WHO), which also found that around 41m people die annually from NCDs.[3] Of these deaths, 15m are considered premature by WHO standards (defined as those between 30 and 69). NCDs primarily affect low socioeconomic groups. More than 85% of premature deaths from NCDs occur in low- and middle-income countries, and this comes at a cost of more than US$21.3trn over the next two decades for developing countries, an amount equal to the entire economic output of those nations in 2013.[4]

As part of its Sustainable Development Goals (SDGs), adopted in 2015, the UN committed itself to reducing premature mortality associated with NCDs by a third by 2030 through better prevention and treatment, including the promotion of mental health and wellbeing. Yet SDG 3.4, which covers NCDs, makes no mention of young people, and it does not address the need to focus on prevention with this age group.

Indeed, young people are often neglected when it comes to policymaking about the health risks they face. Encouragingly, however, there are efforts being made to address this. An example is the WHO's Youth Leaders Network, which had a prominent place on the agenda of the organisation's Global Conference on Primary Healthcare in Astana, Kazakhstan, in October 2018.[5] Another recently launched initiative is the UN Youth Strategy, Youth2030, at the UN General Assembly meeting held in 2018.[6] At the same time, many of those interviewed for this report point out that adolescence is a significant stage of the NCD life cycle and should receive higher priority from health policymakers.

"There is an overwhelming focus in the health service agenda on secondary prevention, and not yet on primary prevention," says Susan Sawyer, director of the Centre for Adolescent Health at the Royal Children's Hospital in Melbourne, Australia, and professor of adolescent health at the University of Melbourne.

[2] R Baker, E Taylor, et al, "Engaging young people in the prevention of non-communicable diseases", *Bull World Health Organ*, 2016; 94;484.
[3] WHO, Noncommunicable diseases, https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases; and NCD Countdown 2030 collaborators, "NCD Countdown 2030: worldwide trends in non-communicable disease mortality and progress towards Sustainable Development Goal target 3.4", *The Lancet*, 392: 1072–88, September 22nd 2018, https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)31992-5/fulltext.
[4] WHO, Noncommunicable diseases, https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases; and Pan American Health Organization and WHO, *Noncommunicable Disease Risk Factors in the Americas: Considerations on the Strengthening of Regulatory Capacity*, 2015, http://iris.paho.org/xmlui/bitstream/handle/123456789/10024/9789275118665rev_eng.pdf, page 14.
[5] WHO, Global Conference on Primary Health Care, October 25th-26th 2018, Astana, Kazakhstan, http://www.who.int/primary-health/conference-phc
[6] UN, Youth2030, https://www.un.org/youthenvoy/youth-un/

The need to address NCD risks in adolescents

Of the world's 7.2bn people, more than 3bn are younger than 25, making them 42% of the global population. Around 1.8bn are aged between 10 and 24, according to the UN Population Fund.[7] Yet some 3,000 adolescents die every day, with more than a million between the ages of 10-19 losing their lives in 2016 as a result of preventable causes such as road injuries, complications from pregnancy or giving birth or HIV/AIDS, according to a recent WHO online feature, which advocates for better health for adolescents.[8]

But adolescent health is not just about preventing death in young people. Research published in *The Lancet* has found that 70% of premature deaths in adults are associated with behaviours that began in childhood.[9] Yet most declarations and action plans to reduce premature adult deaths from NCDs fail to mention the importance of prevention among young people.

Recognising that adolescents constitute a key linking stage within the life cycle, and addressing it accordingly, is vitally important to efforts to reduce NCDs. A consortium of NGOs held a consultation ahead of the September 2018 UN High-Level Meeting on NCDs, with the aim of ensuring that the final political declaration responds to the needs of young people and includes them at a policymaking level.[10]

The organisations drafted a list of ten recommendations to ensure "universal and equitable access to high-quality, affordable, age-appropriate healthcare services for all children, adolescents and young people at risk for and/or living with NCDs." They included removing the lower limit of the WHO definition of premature mortality so the deaths of young people under the age of 30 are counted; mobilising and scaling up sustainable financing to prevent and control the NCD epidemic across the life-course; improving and expanding country-level age-disaggregated surveillance of risk factors and disease prevalence; and prioritising targeted health-promotion campaigns on the risk factors, prevention and management of NCDs for youth, families, schools and communities.[11]

The political declaration from the meeting was extended to include mental health, and the WHO is also looking at the role of pollution in NCDs as part of what is now known as the 5x5 approach to help governments co-ordinate NCDs at the national and subnational levels.[12]

Earlier studies have found that retaining the status quo approach to NCDs could lead to cumulative economic losses for low- and middle-income countries of around US$7trn between 2011 and 2025.[13] Meanwhile, a World Economic Forum report from 2015 found that investment in health promotion and NCD prevention in childhood and adolescence

[7] UNFPA, "The Power of 1.8 billion: Adolescents, Youth and the Transformation of the Future", 2014, https://eeca.unfpa.org/en/news/power-18-billion.
[8] WHO, Coming of age: adolescent health, http://www.who.int/health-topics/adolescents/coming-of-age-adolescent-health
[9] S M Sawyer, et al, "Adolescence: a foundation for future health", *The Lancet*, Vol. 379, Issue 9826, April 28th 2012.
[10] NCD Child, Youth Recommendations for the UN High-Level Meeting on NCDs, http://www.ncdchild.org/media/1347/07-2018-youth-recommendations-un-hlm.pdf
[12] Ibid.
[12] WHO, *Approaches to establishing country-level, multisectoral coordination mechanisms for the prevention and control of noncommunicable diseases*, 2015, https://ncdalliance.org/sites/default/files/resource_files/Multisectoral%20Coordination%20Mechanisms%20for%20NCDs-%20Final_0.pdf.
[13] D E Bloom, E T Cafiero, et al, "The global economic burden of NCDs 2011", World Economic Forum

can provide significant health and economic returns, with NCDs expected to cost more than US$30trn over the next 20 years, or 48% of global GDP in 2010.[14] These costs dwarf those of potential preventive intervention. Indeed, a May 2018 WHO report found that the cost of implementing the best evidence-based measures for reducing tobacco, harmful alcohol use, unhealthy diets and physical inactivity was an additional US$1.27 per person in low- and middle-income countries, and that every US$1 invested in these so-called best buy measures would yield a return of at least US$7 by 2030 and reduce premature mortality by 15% during the same period.[15]

In Chapter 1 this report will highlight why youth NCD prevention is important before delving into an analysis of the NCD scorecard that was developed by The Economist Intelligence Unit to assess how ten representative countries of different income levels are addressing the health challenges associated with NCDs and adolescence. In Chapter 2 we will look at the importance of strategy and planning. This will be followed by a deeper look into the scorecard findings on healthy diets, nutrition and physical exercise in Chapter 3, on alcohol and tobacco in Chapter 4, on sexual and reproductive health in Chapter 5, and mental health in Chapter 6. The conclusion will summarise the key findings and add key takeaways for policymakers.

[14] World Economic Forum "Maximizing health life years: Investments that pay off", 2015, http://www3.weforum.org/docs/WEF_Maximizing_Healthy_Life_Years.pdf

[15] World Health Organisation, "Saving lives, spending less: A strategic response to noncommunicable diseases", May 2018; study funded by Bloomberg Philanthropies, page 3. https://www.who.int/ncds/management/ncds-strategic-response/en/

Chapter 1: Why youth NCD prevention is important

Adolescence is a time of rapid development, exploration and self-determination. It is also a key point in the human life cycle when environment and behaviour can help to solidify, or even introduce, risk factors for non-communicative diseases (NCDs).

Indeed, the Lancet Commission on Adolescent Health and Wellbeing has highlighted the "triple dividend" to be gained from a sustained focus on the 10-24 age group, benefitting young people during their adolescent years, during adult life, and with benefits passing to future generations. In a 2018 article, the group noted that adolescence "can be considered a sensitive phase, during which the quality of the physical, nutritional and social environments may change trajectories of health and development into later life."[16]

> **"[Current policy systems are] overwhelmingly focused on a health-service agenda, on a secondary prevention agenda, and not yet on a primary agenda."**
>
> *Susan Sawyer, director, Centre for Adolescent Health, Royal Children's Hospital, Melbourne, Australia, and professor of adolescent health, University of Melbourne*

Investing in adolescence brings crucial benefits, according to Dr Sawyer. First, she mentions the benefits that accrue during adolescence itself, in the form of primary prevention, for example, improved mental health that results in reduced rates of suicide among adolescents and increased numbers of bipolar young people staying at school. Second, as adolescence is the time of onset of risks for adult NCDs, public-health efforts that reduce the number of young people starting to smoke and promote physical activity pay off across the life course as adolescents mature into healthier adults. These benefits get amplified across the next generation, when fewer parents smoke, and when parents are less overweight and obese.

Deficits in primary prevention

However, Dr Sawyer notes that current policy systems are "overwhelmingly focused on a health-service agenda, on a secondary prevention agenda, and not yet on a primary agenda." The latter, she explains, would involve a much stronger focus on children and young people, and more population approaches, such as "promoting continued secondary education by ensuring that 18 really is the minimum age of marriage, taking a harder look at the environmental frameworks around for-profit companies, and legislative frameworks around access to tobacco, including higher taxes."

The Lancet Commission also showed strong returns for a number of modelled interventions targeting physical, mental and sexual health, including human papilloma virus (HPV) vaccination programmes that are aimed at preventing major cancers, notably cervical cancer. Investment of just US$4 to US$6 per head each year in 2015-30 had an unweighted mean benefit-to-cost ratio of more than 10.[17]

[16] G C Patton, C A Olsson, et al, "Adolescence and the next generation", *Nature*, 2018.
[17] P Sheehan, K Sweeny et al, "Building the foundations for sustainable development: a case for global investment in the capabilities of adolescents", *The Lancet*, Vol. 390, October 14th 2017.

Several of those interviewed for this paper observed that although the youth demographic covers those aged 10-24, in terms of shaping behaviour, 10-14 might be the most significant age group for many interventions.

Increasing autonomy and decreasing parental influence mean that young people increasingly choose their own behaviours, such as food intake or physical activities, more frequently without the oversight of parents. Physical and emotional changes as a result of puberty can lead to decisions such as withdrawal from exercise due to embarrassment or social pressures, or engaging in risky sexual behaviour, that can contribute to both immediate harm and longer- term health consequences.

> **"We have an issue that adolescents are often seen as a healthy group."**
>
> *Marie Hauerslev, chair-elect, NCD Child, and physician, Aarhus Universitetshospital, Denmark*

In addition, adolescents often fall into a health-services gap, in which they are too old for child health interventions and too young for adult health services. "We have an issue that adolescents are often seen as a healthy group; from ten onwards we often forget about health and address it when people are in their 30s, 40s and 50s and already suffering from NCDs or one or more risk factors," says Marie Hauerslev, chair-elect of NCD Child, a global coalition of non-profit organisations whose founding members include the International Association for Adolescent Health, Johns Hopkins Bloomberg School of Public Health, Save the Children and UNICEF. The organisation advocates for the needs of children, adolescents and young people who are living with or at risk of developing NCDs. "I think it is very important to understand the adolescent brain is different from the brain of a 30 to 40 year old. As policymakers and healthcare professionals, we must take action to protect this group as well as realise the opportunity to create a health generation to lead our countries into the future," adds Dr Hauerslev, who is also a physician at Aarhus Universitetshospital in Denmark.

> **"We are at risk of falling into blaming the victim, when I think we should focus more on the physical environment and the food environment."**
>
> *Stefan Peterson, chief of health, UNICEF*

The fact that so many potential factors leading to NCDs fall into the area of behavioural risk factors can be stigmatising for young people, who, from a physiological and development perspective, are more prone to risk-taking anyway, notes Stefan Peterson, chief of health at UNICEF, adding that adolescents are more likely to make informed choices if they have a healthier physical and social environment in which to do so.

"We are at risk of falling into blaming the victim, when I think we should focus more on the physical environment and the food environment," he adds.

Risk factors

Premature NCD deaths due to cardiovascular disease, diabetes, cancers and chronic respiratory diseases are linked to five "modifiable" risk factors: tobacco, poor diet,

harmful use of alcohol, insufficient physical activity and air pollution. Mental health disorders are also a significant contributor to premature mortality. Depression is the third-leading cause of illness and disability among adolescents.[18]

The causes of death of young people vary regionally, by gender and by age group. The highest adolescent death rates can be found in Africa and the Eastern Mediterranean. The main causes of death for boys aged 10-14 are road accidents, drowning and HIV/AIDS, while for girls in the same age group the main causes are HIV/AIDS, road accidents and lower respiratory infections. For those aged 15-19 the main causes are road accidents, interpersonal violence and self-harm (boys) and maternal conditions, self-harm and road accidents (girls), respectively.[19]

Similarly, NCD risk factors for illness vary depending on context. "With this age group, it is very culturally and context specific, and hard to make generalisations," Dr Nishtar says. "Diet, alcohol risk and tobacco all compound each other."

"Diet, alcohol risk and tobacco all compound each other."

Sania Nishtar, co-chair, WHO High- Level Global Commission on NCDs, and founder, Heartfile

Young people worldwide are susceptible to the marketing of unhealthy foods, tobacco and alcohol, and many grow up in environments that are especially unfavourable to the adoption of healthy eating and exercise. This is particularly true in lower- and middle-income countries.

More than 150m young people smoke, 81% of adolescents do not get enough physical activity, and 11.7% of adolescents participate in heavy episodic drinking, the WHO has found. In addition, 41m children under 5, and more than 340m of those aged 5-19, were overweight or obese in 2016, making it more likely that they will carry this excess weight into later life. Indeed, the prevalence of overweight and obesity among children and adolescents aged between 5 and 19 years has risen to just over 18% in 2016, from just 4% in 1975, according to the WHO.[20] A separate study by Imperial College London found that there had been a tenfold increase in childhood and adolescent obesity in the four decades to 2016.[21] These factors help contribute to the estimated 7m annual deaths from tobacco use,[22] 3m deaths from harmful use of alcohol,[23] and nearly 4m deaths linked to obesity and overweight.[24]

Although adolescents from lower-income countries are most likely to suffer from the double burden of poverty and other NCD risk factors, the prospects for adolescents and young people across countries have deteriorated in recent years, according to an

[18] WHO, Adolescent mental health, http://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health
[19] WHO, Coming of age: adolescent health, http://www.who.int/health-topics/adolescents/coming-of-age-adolescent-health
[20] WHO, NCD and Youth, http://www.who.int/global-coordination-mechanism/ncd-themes/ncd-and-youth/en/; and WHO, Obesity and overweight, http://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight
[21] NCD Risk Factor Collaboration (NCD-RisC), "Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults", *The Lancet*, October 10th 2017. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32129-3/fulltext?dgcid=twitter_social_world-obesity-day17. Study funded by Wellcome Trust and AstraZeneca Young Health Programme.
[22] WHO, Tobacco, https://www.who.int/news-room/fact-sheets/detail/tobacco
[23] WHO, Alcohol, https://www.who.int/news-room/fact-sheets/detail/alcohol
[24] The GBD 2015 Obesity Collaborators, "Health effects of Overweight and Obesity in 195 Countries over 25 Years," the GBD 2015 Obesity Collaborators, published in *New England Journal of Medicine*, 377:13-27 July 6th 2017. https://www.nejm.org/doi/full/10.1056/NEJMoa1614362?query=featured_home

editorial by the Lancet Commission, citing high unemployment, stagnating wages and alienation, among other problems.[25] It notes that policymakers have an unprecedented opportunity to "make adolescents the human face" of the SDGs by 2030 and beyond.

In sum, a key group of factors—nutrition and physical activity, alcohol and tobacco, sexual and reproductive health, and mental health—determine both the vulnerability of adolescents while they are still in the 10-24 demographic and their risk factors for developing NCDs later in the life cycle.

The social, environmental and commercial determinants of health

Focusing on adolescents has a double impact on the fight to reduce NCDs. For those young people already suffering from obesity and who are more prone to related conditions such as diabetes, education and awareness campaigns can help promote health early on, reducing the likelihood of health complications later. Prevention programmes, meanwhile, offer the potential to reduce levels of obesity once adolescents progress to adulthood.

Similarly, diagnosing and treating other conditions, such as mental health problems, as early as possible, has the potential to prevent the onset of further mental conditions as well as helping to reduce a range of risk factors—from increased tobacco and alcohol consumption to risky sexual behaviour—that are connected to NCDs.

Researchers cite the central contribution of the social determinants of health (including early life, poverty, social exclusion and stress) in driving the prevalence of NCD risk factors. Many increasingly include the "commercial determinants of health", including the marketing of unhealthy products, such as low-nutrition foods, alcohol and tobacco, to young people.[26]

The more comprehensive and interlinked NCD policies are, the more successful they are likely to be, notes Dr Peterson. "When you look at population outcomes, it is population-level measures that will have a bigger impact than individual ones," he adds. "There is an interconnection between what you get in the health system through immunising and encouraging breast-feeding, what you do in the food system through differential pricing, cross-subsidising and trade agreements, the whole physical environment of parks and sidewalks, and finally social support and cash transfers."

Finland is one country that is looking to curb childhood obesity by adopting a Health in All Policies approach to mandate health promotion services and require municipalities to work across all sectors.[27] The changes helped contribute to an increase in life expectancy at birth of more than 20 years between 1941 and 2004, and an 82% drop in age-adjusted mortality from chronic heart disease among Finnish men aged 35-64 years from 1969 to 2011.[28]

[25] "Adolescent health and wellbeing: a key to a sustainable future," Comment, *The Lancet*, Vol. 387, June 11th 2016.
[26] See for example G Cairns et al, "Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. A retrospective summary", *Appetite*. 2013 Mar;62:209-15; and I Kickbusch et al, "The commercial determinants of health", *The Lancet*, Vol. 4, Issue 12, December 1st 2016.
[27] WHO, "Finland curbs childhood obesity by integrating health in all policies", http://www.who.int/features/2015/finland-health-in-all-policies/en; National Institute for Health and Welfare, Health in All Policies https://thl.fi/fi/web/health-promotion/health-in-all-policies
[28] P Jousilahti, "Health in All Policies – How was it achieved in Finland?", Finnish National Institute for Health and Welfare, September 13th 2014, pages 45-49, http://www.searo.who.int/entity/noncommunicable_diseases/events/ncd-bengaluru-health-in-all-policies-finland.pdf?ua=1.

The WHO also estimates that environmental determinants of health, such as indoor and outdoor pollution, contribute directly to NCDs, with household air pollution and ambient particulate matter a leading global risk factor for adolescent death and disability among 10-14 year olds.[29]

Indeed, a Swedish longitudinal study of children and adolescents found an association between neighbourhood concentrations of air pollution and dispensed medications for psychiatric disorders.[30] A recently released WHO report found that the global death rate for children aged 5-14 attributable to a combination of household and ambient air pollution was 4.1 per 100,000 children in 2016, with deaths most heavily concentrated among low- and middle-income countries.[31]

Not all public health NCD interventions used successfully on adolescents in high-income settings are applicable to low- and middle-income countries, and more evidence needs to be collected on their transferability, but several specific interventions have been proven to be effective, including: maternal micronutrient supplementation, breastfeeding and appropriate complementary feeding to improve nutrition; HPV vaccination among adolescent girls in areas where screening is limited; and universal hepatitis B vaccination.[32]

Obstacles

There are, in addition, questions about obstacles that prevent young people from accessing help and support, even when it is available. "I think one of the biggest challenges is to get young people to care and want to be a part of activities, including lifestyle changes and accepting the need to do this," says Alyssa Frampton, a youth health advocate and public policy student from Canada. "When we talk about early prevention and detection, there is often a huge barrier to being able to access these services. Even in Canada, young people are often not able to access primary care due to anxiety or shortage of doctors."

Rodrigo Rodriguez-Fernandez, global medical director for NCDs at International SOS, a company providing medical and travel security services to large organisations, adds that the "health-seeking behaviour of this particular age group is pretty much non-existent... because the actual design of the healthcare system is poorly executed to facilitate these age groups to change behaviour, but also because health providers are poorly equipped to look after and talk to this age group."

The focus on adolescence as a key time frame for investing in NCD prevention has only evolved over the past few years, and the lack of attention to this age group previously means experts have less data about which interventions are most cost-effective, especially in areas such as obesity prevention and promotion of mental health, according to Rachel Nugent, vice-president for Global NCDs at RTI International, a non-profit institute providing research, development and technical services to government and commercial clients around the globe. By contrast, there are better data available for the value of taxes and regulation in deterring tobacco and alcohol use among adolescents.

[29] Ibid.
[30] A Oudin, L Braback et al, "Association between neighbourhood air pollution concentrations and dispensed medication for psychiatric disorders in a large longitudinal cohort of Swedish children and adolescents", *BMJ Open*, Vol. 6, Issue 6, June 3rd 2016.
[31] WHO, "Air Pollution and Child Health: Prescribing clean air", 2016, page 16.
[32] UNICEF, Review of interventions to promote healthy behaviours for the prevention of NCDs among children and adolescents, UNICEF, 2016; and L Brumana, A Arroyo et al, "Maternal and child health services and an integrated life-cycle approach to the prevention of NCDs", *British Medical Journal of Global Health*, 2017;2.

TABLE 1
Selected social and environmental determinants of health in the ten countries included in the scorecard

		Brazil	Ethiopia	Hungary	India	Indonesia	Russia	Saudi Arabia	Sierra Leone	South Africa	US
Social determinants of health	Mean years of schooling	7.8	2.6	11.9	6.4	8	12	9.5	3.5	10.1	13.4
	Youth not in school or employment (% ages 15-24)	24.8	10.5	11.1	27.5	21.4	12.4	16.1	10.1	31.1	16.5
	Youth unemployment rate (% ages 15-24)	30.4%	7.4%	11.3%	10.5%	15.6%	16.3%	34.7%	9.0%	57.4%	9.5%
	GNI per head, PPP (current international US$)	15160	1890	26960	7060	11900	24890	54770	1480	13090	60200
	Population living below income poverty line, PPP US$1.90 a day (%)	3.4%	26.7%	0.5%	21.2%	5.7%	0.0%	No data	52.2%	18.9%	1.2%
	Inequality in income distribution (%)	36.7%	13.4%	15.2%	18.8%	24.9%	17.7%	No data	19.2%	56.4%	28.1%
Environmental indicators	Deaths due to the environment from NCDs (per 100,000 population)	70	94	113	207	152	143	110	210	100	46
	Deaths due to joint effects of household and ambient air pollution (per 100,000 population)	31	82	83	141	81	86	39	148	61	24
	Mean concentration of particulate matter of less than 2.5 microns of diameter	11.5	34.4	15.6	65.2	15.6	13.7	78.4	20.6	23.6	7.4

Sources: UN, UNDP, WHO, World Bank.

Chapter 2: The importance of strategy and planning

The Economist Intelligence Unit has developed a scorecard based on a literature review and in consultation with an international panel of experts in adolescent health and NCDs. The scorecard assesses the performance of ten representative countries in responding to the challenge of NCDs and NCD risk among young people.

The countries evaluated in the scorecard include three high-income countries (Hungary, Saudi Arabia and the US), five middle-income countries (Brazil, India, Indonesia, Russia and South Africa) and two low-income countries (Ethiopia and Sierra Leone), which were selected to ensure geographic and economic diversity. The scorecard is designed to provide a snapshot of current policy and practice in the selected countries. The full scorecard results are shown in the tables below. For a more detailed methodology description see the Appendix and a separate methodology paper.

Table 2 shows the scorecard results by the four risk factors/health areas covered in our study: healthy diets, nutrition and physical exercise; alcohol and tobacco; sexual and reproductive health; and mental health. Within the category of healthy diets, nutrition and physical exercise, the indicators on national strategies to promote healthy diets and physical activity are weaker than other areas. For alcohol and tobacco, it is national awareness campaigns to reduce alcohol use that are a particular weak spot, while there is also a lot of room for improvement in anti-tobacco strategies. Within sexual and reproductive health, the score for national strategies to promote sexual and reproductive health is weaker than others, while in the mental health category problems already start with the national policy approach in many countries. It is more difficult to compare progress across different risk factors/health areas, but it is clear that none of the four areas stand out as particularly stronger than others. Chapters 3-6 will delve more deeply into scorecard results for the specific risk factors and health areas.

Table 3 shows the scorecard results by policy, awareness and implementation indicators. It is clear that policy seems to be an area of strength across countries (with notable exceptions, such as Saudi Arabia). The picture for awareness and implementation is significantly patchier across both countries and risk factors/health areas. This chapter will look at more detail into the importance of national NCD plans and adolescent health policy and strategy.

TABLE 2
Policy Scorecard on Preventing Non-Communicable Disease in Youth: View by risk factor/health area

Indicators	Brazil	Ethiopia	Hungary	India	Indonesia	Russia	Saudi Arabia	Sierra Leone	South Africa	US
Healthy diets, nutrition and physical exercise										
Existing national policy with focus on nutrition	3	3	3	3	3	3	1	2	3	3
Existing national policy with focus on physical activity	3	3	3	3	3	3	1	2	3	3
National awareness campaigns to promote healthy diets	2	2	2	2	2	2	2	0	2	2
National awareness campaigns to promote physical activity	1	0	1	1	1	1	1	0	0	1
National strategies to promote healthy diets	4	0	4	3	0	2	4	0	3	3
National strategies to promote physical activity	2	1	1	1	2	2	1	0	1	2
Alcohol and tobacco										
Existing national policy with focus on tobacco use	3	3	2	3	3	2	1	2	1	3
Existing national policy with focus on alcohol use	3	3	2	3	3	2	N/A	2	3	3
National awareness campaigns to reduce tobacco use	3	3	2	3	3	3	3	1	1	3
National awareness campaigns to reduce alcohol use	2	1	1	2	1	2	N/A	0	1	2
National strategies to reduce alcohol use	3	2	2	3	2	2	N/A	1	2	2
National restrictions on direct advertising of tobacco	3	3	2	2	0	3	3	0	1	2
Smoking cessation programmes	3	0	2	3	1	2	2	0	0	3
Taxation on tobacco products	2	0	3	2	2	2	1	0	2	1
National smoking bans in public places*	4	3	3	4	3	4	3	0	0	0
Sexual and reproductive health										
Existing national policy with focus on sexual and reproductive health	3	3	3	3	3	3	0	3	3	3
National awareness campaigns to promote sexual and reproductive health	2	2	1	2	2	1	0	2	2	2
National strategies to promote sexual and reproductive health	2	1	2	1	1	2	0	0	2	2
Mental health										
Existing national policy with focus on mental health	2	3	3	3	0	3	0	2	3	3
National awareness campaigns to promote mental health	2	2	2	2	1	2	0	1	2	2
National strategies to promote mental health	2	1	1	2	1	2	2	1	2	2

Key

Very high | Moderate | Low | Very low

Note: *Scores are based on the existence of a national smoking ban as reported by the WHO. However, some countries may operate these bans on a regional or state level.
Source: The Economist Intelligence Unit, Policy Scorecard on Preventing Non-Communicable Disease in Youth

TABLE 3
Policy Scorecard on Preventing Non-Communicable Disease in Youth: View by policy, awareness and implementation

Indicators	Brazil	Ethiopia	Hungary	India	Indonesia	Russia	Saudi Arabia	Sierra Leone	South Africa	US
Policy										
National NCD plan	1	0	1	1	1	1	1	0	0	1
National adolescent health policy/ strategy	1	1	1	1	1	1	0	1	1	1
Existing national policy with focus on nutrition	3	3	3	3	3	3	1	2	3	3
Existing national policy with focus on physical activity	3	3	3	3	3	3	1	2	3	3
Existing national policy with focus on tobacco use	3	3	2	3	3	2	1	2	1	3
Existing national policy with focus on alcohol use	3	3	2	3	3	2	N/A	2	3	3
Existing national policy with focus on sexual and reproductive health	3	3	3	3	3	3	0	3	3	3
Existing national policy with focus on mental health	2	3	3	3	0	3	0	2	3	3
Awareness										
National awareness campaigns to promote healthy diets	2	2	2	2	2	2	2	0	2	2
National awareness campaigns to promote physical activity	1	0	1	1	1	1	1	0	0	1
National awareness campaigns to reduce tobacco use	3	3	2	3	3	3	3	1	1	3
National awareness campaigns to reduce alcohol use	2	1	1	2	1	2	N/A	0	1	2
National awareness campaigns to promote sexual and reproductive health	2	2	1	2	2	1	0	2	2	2
National awareness campaigns to promote mental health	2	2	2	2	1	2	0	1	2	2
Implementation										
National strategies to promote healthy diets	4	0	4	3	0	2	4	0	3	3
National strategies to promote physical activity	2	1	1	1	2	2	1	0	1	2
National strategies to reduce alcohol use	3	2	2	3	2	2	N/A	1	2	2
National strategies to promote sexual and reproductive health	2	1	2	1	1	2	0	0	2	2
National strategies to promote mental health	2	1	1	2	1	2	2	1	2	2
National restrictions on direct advertising of tobacco	3	3	2	2	0	3	3	0	1	2
Smoking cessation programmes	3	0	2	3	1	2	2	0	0	3
Taxation on tobacco products	2	0	3	2	2	2	1	0	2	1
National smoking bans in public places*	4	3	3	4	3	4	3	0	0	0

Key

Very high | Moderate | Low | Very low

Note: *Scores are based on the existence of a national smoking ban as reported by the WHO. However, some countries may operate these bans on a regional or state level.
Source: The Economist Intelligence Unit, Policy Scorecard on Preventing Non-Communicable Disease in Youth

National NCD policies

The existence of national NCD policies is significant because it indicates that countries recognise NCDs and individual risk factors as key challenges facing their healthcare systems. There needs to be better linking-up between the various individual policies, says Ms Frampton; a competent overall strategy can help to do that.

The scorecard surveyed the ten countries according to seven metrics relating to national NCD planning, including the existence of an overarching NCD plan and specific policy on national adolescent health, as well as the presence of specific plans focused on nutrition, physical activity, tobacco use, alcohol use, sexual and reproductive health, and mental health.

Most of the countries surveyed in the scorecard get the highest marks for the existence of policies covering the individual risk factors, although three countries (Ethiopia, Sierra Leone and South Africa) have no overarching national plan on NCDs. The weakest performers in the national policies category include both one of the wealthiest countries (Saudi Arabia) and the poorest (Sierra Leone), with the latter scoring higher across the sub-categories than the former.

National adolescent health policy and strategy

The existence of national strategies associated with specific areas of NCD prevention suggest that countries have not only identified the existence of the problem but are taking some steps to identify solutions.

Consequently, there is a much greater degree of variety in the area of national strategies to promote healthy diets and behaviour, both within countries and between them. Mental health is the only sub-category in which all countries surveyed have at least some identifiable policy, an especially interesting finding given the tendency for mental health to be the neglected "step-child" of healthcare in many parts of the world. This shows that the existence of a strategy alone is clearly insufficient (see Chapter 6, which is dedicated to mental health).

In addition, while there is much to be gained by engaging further with young people themselves, policymakers need to try to engage the less obvious candidates, points out Ms Frampton. "There is a need to develop these policies with young people, not always with model students but with the young people who are going behind the school to smoke."

Very few countries have an entire range of NCD programmes in place, notes Dr Nishtar. She notes two examples of developing countries, Sri Lanka and Costa Rica, which have integrated NCDs broadly into primary healthcare rather than looking at "vertical" programming to address individual risk factors. There is a place for both approaches, she emphasised.

"I don't want to discount the importance of having some programmes focusing on certain areas because this can build up advocacy leverage and push the agenda, but beyond that, when it comes to health-services delivery, you have to piggy back."

Regional and income comparators

While there is little correlation between region and income and the existence of national policies on NCDs and adolescent health, there appears to be a stronger link, unsurprisingly, between income levels and the ability to field national strategies across the individual indicators.

The poorest countries in the scorecard, Ethiopia and Sierra Leone, receive the largest amount of "zero" or low scores for individual national strategies, although Ethiopia does better than its West African neighbour, perhaps because of decades of intense focus and investment in its healthcare system.

> **"Our access to comprehensive data across adolescent and young adult years is very limited."**
>
> *Susan Sawyer, director, Centre for Adolescent Health, Royal Children's Hospital, Melbourne, Australia, and professor of adolescent health, University of Melbourne*

One particular obstacle facing the scorecard is the challenge of data collection, notes Dr Sawyer. "Our access to comprehensive data across adolescent and young adult years is very limited, and conceptually we don't yet have sufficient coherence around age groups that are of most significance for NCD prevention," she adds. "We need to disaggregate data in five-year age bands—10-14, 15-19 and 20-24 years—which will also allow better tracking of trends."

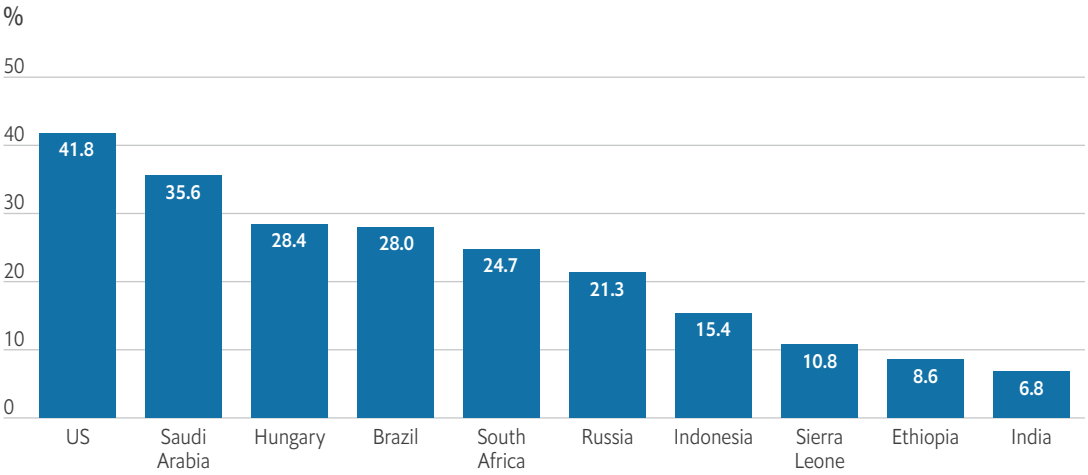
Chapter 3: Healthy diets, nutrition and physical exercise

The importance of healthy diets and nutrition has long been a focus of campaigns to reduce the prevalence of NCDs, with many projects aimed at children under 5 and women of childbearing age (defined by the WHO as women from 15 to 49 years old).[33] Yet high rates of early motherhood, especially among adolescent girls in parts of Latin America, Africa and southern Asia, have highlighted the importance of looking more closely at the youngest cohort of this age group, both as a focus in its own right and as a way of influencing the next generation.

Similarly, physical exercise, or the lack of it, is a common characteristic of the adolescent period, when rapid changes and increased self-consciousness can combine with cultural factors to inhibit physical activity, especially among girls. According to the WHO, 81% of adolescents do not get enough physical activity.[34]

Taking a longer-term perspective, obesity in adolescence is one of the biggest risk factors for NCDs in later life: 70% of obese adolescents continue to be obese as adults.[35] At the same time, levels of child and adolescent obesity have risen tenfold over the past 40 years, rising to 124m in 2016, from 11m in 1975.[36] According to the WHO, 18% of children and adolescents aged 5-19 were overweight or obese in 2016. In the countries included in the scorecard,

Prevalence of overweight among children and adolescents, body mass index > +1 standard deviations above the median (crude estimate)



Source: The Economist Intelligence Unit.

[33] WHO, Infertility definitions and terminology, https://www.who.int/reproductivehealth/topics/infertility/definitions/en/
[34] UN, Adolescent Health, http://www.un.org/youthenvoy/wp-content/uploads/2015/06/YouthStatsHealthpdf2.pdf
[35] M Simmonds, A Llewellyn et al, "Predicting adult obesity from childhood obesity: a systematic review and meta-analysis", *Obesity Reviews*, December 23rd 2015; and "The Surgeon General's Call To Action To Prevent and Decrease Overweight and Obesity", http://www.wvdhhr.org/bph/oehp/hp/obesity/fact_adolescents.htm
[36] "Worldwide trends in body-mass index, underweight, overweight and obesity from 1975 to 2016: a pooled analysis of population-based measurement studies in 128.9 million children, adolescents, and adults", *The Lancet*, Open Access publication, October 10th 2017; and WHO, "New global estimates of child and adolescent obesity released on World Obesity Day", October 10th 2017, http://www.who.int/end-childhood-obesity/news/new-estimate-child-adolescent-obesity/en/

childhood obesity is particularly prevalent in the US and Saudi Arabia (see chart).

In addition to having health risks for adolescents, obesity is directly connected to many of the major NCD disease groups, including cardiovascular conditions and cancer. Moreover, the consequences carry through to the next generation: in high-income countries, an estimated one in five women and men in the peak years of first parenthood are obese, with antenatal interventions to prevent related foetal problems having limited effects.[37]

Strategies and policy

All of the ten countries in the scorecard have national plans that focus on nutrition and physical activity, and all with the exception of Saudi Arabia have plans that are specifically targeted at adolescents.

Yet a breakdown of the strategies used to address the issues of unhealthy eating and sedentary lifestyles shows a much greater discrepancy in terms of follow-through. A stated willingness to combat unhealthy eating options in national plans is rarely followed through with taxes and other regulations in the food and beverages sector despite some studies showing that sugary beverage taxes have the most significant impact on diet, according to a recent presentation by RTI prepared for the UN General Assembly high-level meeting on NCDs.[38] Among the scorecard countries, all except Ethiopia, Indonesia, Russia and Sierra Leone have passed taxes on sugary beverages.

In the case of the lowest-income countries in the scorecard (Ethiopia, Indonesia and Sierra Leone), there were no national strategies dedicated to promoting healthy diets, although most of the middle-income and high-income countries have policies designed to limit intake of ingredients such as saturated fats, salt and sugar, and legislation covering taxation of sugar sweetened beverages.

This was a particular gap in a country such as Indonesia, which suffers from serious problems with adult and child malnutrition, according to Ms Nugent.

Three countries—Brazil, Hungary and Saudi Arabia—have a national policy on the marketing of unhealthy foods and drinks.

In the case of physical activity, which has proven benefits for mental health and self-esteem as well as helping to reduce the risk of chronic disease,[39] all of the scorecard countries with the exception of Sierra Leone have at least school-based physical education programmes, although efforts to counteract the built environment pose greater challenges in many places, those interviewed for this study say.

Examples of campaigns and best practice

Several countries in the scorecard have integrated awareness plans focused on healthy lifestyles and nutrition. For example, "Healthy Hungary 2014-2020" promotes healthy lifestyles for children and young people, with healthy eating highlighted as part of healthy physical and mental development.[40] The country is also making an effort to include fish and game meat bred in Hungary as part of school and other communal menus. In Brazil, there have been campaigns to encourage the

[37] G C Patton C A Olsson, et al, "Adolescence and the next generation".
[38] Presentation figures included in: R Nugent, J Hale et al, "Research Brief: Investment Case for Reducing Noncommunicable Disease Risk Factors in Adolescents," RTI International, April 2018, https://www.rti.org/publication/research-brief-1
[39] WHO, Global Strategy on Diet, Physical Activity and Health, Physical activity and young people, https://www.who.int/dietphysicalactivity/factsheet_young_people/en/
[40] European Commission, "7.4 Healthy lifestyles and healthy nutrition", https://eacea.ec.europa.eu/national-policies/en/content/youthwiki/74-healthy-lifestyles-and-healthy-nutrition-hungary

TABLE 4
Scorecard indicators on healthy diets, nutrition and physical exercise

Indicators	Brazil	Ethiopia	Hungary	India	Indonesia	Russia	Saudi Arabia	Sierra Leone	South Africa	US
Existing national policy with focus on nutrition	3	3	3	3	3	3	1	2	3	3
Existing national policy with focus on physical activity	3	3	3	3	3	3	1	2	3	3
National awareness campaigns to promote healthy diets	2	2	2	2	2	2	2	0	2	2
National awareness campaigns to promote physical activity	1	0	1	1	1	1	1	0	0	1
National strategies to promote healthy diets	4	0	4	3	0	2	4	0	3	3
National strategies to promote physical activity	2	1	1	1	2	2	1	0	1	2

Key: Very high; Moderate; Low; Very low

Source: The Economist Intelligence Unit, Policy Scorecard on Preventing Non-Communicable Disease in Youth

population to avoid processed meals and eat food that is native to the country.[41] Brazil is also promoting better food labelling.[42]

The RTI research, based on structured literature reviews and consultations with experts in the field, identified two cost-effective interventions that were backed by evidence and are most effective with adolescents: taxing sugar-sweetened beverages (SSBs) and school-based nutrition and physical activity programmes.[43]

Limiting consumption of foods and drinks high in fat, sugar and salt by children and adolescents, including nutritional labelling and taxing and increasing the price of unhealthy foods and beverages, are all so-called best buy interventions considered most cost-effective and easy to implement, according to the WHO.[44]

A separate report by RTI found that the addition of a 20% excise tax on sugar-sweetened beverages led to a 10% increase in price and a 10% decrease in SSB consumption.[45]

[41] *The Atlantic*, "The Brazilian Guide to Weight Loss", January 7th 2016, https://www.theatlantic.com/health/archive/2016/01/the-brazilian-guide-to-food-and-life/422301/
[42] S M Souza, K C Lima et al, "Promoting public health through nutrition labeling—study in Brazil," *Archives of Public Health*, November 14th 2016.
[43] Presentation figures included in: R Nugent, J Hale et al, "Research Brief: Investment Case for Reducing Noncommunicable Disease Risk Factors in Adolescents," RTI International, April 2018, https://www.rti.org/publication/research-brief-1
[44] WHO, "Best buys and other recommended interventions for the prevention and control of noncommunicable diseases", updated (2017); and appendix 3 of the global action plan for the prevention and control of NCDs 2013-2020, http://www.who.int/ncds/management/WHO_Appendix_BestBuys.pdf?ua=1
[45] R Nugent, J Hale et al, "Investment Case for Reducing Noncommunicable Disease Risk Factors in Adolescents", RTI International Research Brief, April 2018, page 4, https://www.rti.org/publication/research-brief-1; and WHO, "Fiscal policies for diet and prevention of noncommunicable diseases", Report No. 978, 2016.

The report also cited a Chinese study that found implementation of comprehensive school-based, physical activity and nutrition programmes led to a 0.29 kg/sq metre reduction in mean body mass index.[46]

In the area of physical activity, increasing its frequency is a key best practice, although this depends on adequate facilities for play and sports, something that is often in short supply in lower-income countries. Denmark has introduced physical activity every day in schools, Dr Hauerslev notes, while thousands of primary-school children in 36 countries around the world now participate in the Daily Mile, a UK-based programme that gets children to run or jog 15 minutes a day together as part of their school day.[47]

Dr Rodriguez-Fernandez acknowledges caveats in focusing primarily on school-based NCD programmes. "My only concern would be that any time you try to introduce curriculum or educational reform [it] can be a 10-15 year process, as you are dealing with politicians who don't react as fast as the private sector," he adds. "In the meantime, I would partner with the retail industry, for instance, which has a vested interest in reaching adolescents and doing it well."

Although partnerships with food and beverage companies have been inherently controversial due to conflicts of interest, global NGOs need to widen their focus to look at clothing and technology retailers with significant corporate social responsibility budgets and market penetration, he says.

Regional and income comparators

A look at the scorecard confirms that lower-income countries have particular difficulty in implementing strategies for encouraging healthy diets, with Ethiopia and Sierra Leone receiving a score of zero for this sub-category. This is despite the fact that they experience what's known as "double malnutrition", which is characterised as the simultaneous existence of undernourishment and overweight and obesity within the same country.

By comparison, middle- and upper-income scorecard countries such as Brazil, Hungary and Saudi Arabia receive the highest scores for taxing SSBs and regulating marketing of unhealthy foods and beverages. Saudi Arabia has the second-highest rate of obesity of the scorecard countries with 17.4% of children and adolescents between the ages of 5 and 19 suffering from obesity, while the rate in the US stands at 21.4%, according to WHO data.[48]

Yet the scores also hide discrepancies in government commitment to tackling risk factors related to obesity, Ms Nugent says. "Even where you have scores that are the same across countries, they may be hiding substantial differences," she points out. "A country like South Africa that has very strong political will is putting sugar-sweetened beverage taxes in place and food reformulation

[46] R Nugent et al, "Investment Case for Reducing Noncommunicable Disease Risk Factors in Adolescents", page 4; and L Meng, H Xu, et al, "The costs and cost-effectiveness of a school-based comprehensive intervention study on childhood obesity in China", *PLoS One*, October 18th 2013.
[47] The Daily Mile, https://thedailymile.co.uk
[48] WHO, Global Health Observatory data, "Overweight and obesity", http://www.who.int/gho/ncd/risk_factors/overweight_obesity/obesity_adolescents/en/

in place. They have a big hill to climb, but they are making progress in climbing it, whereas Indonesia is not."

Outside the scorecard nations, other countries provide enlightening examples of the challenges. Mexico has struggled to control obesity, despite 72% of its adult population being diagnosed as either overweight or obese in 2016.[49] Although Mexico's government placed an excise tax on SSBs in 2014, food companies have fought back against campaigners' efforts to introduce front-of-pack labelling, control marketing to children and launch healthy school initiatives. Cuts to health budgets since 2013 also mean that funding for prevention and control of obesity and diabetes has remained below 1% of the health budget.[50]

"A country like South Africa that has very strong political will is putting sugar-sweetened beverage taxes in place and food reformulation in place."

Rachel Nugent, vice-president, Global NCDs, RTI International

[49] S Barquera and M White, "Treating Obesity Seriously in Mexico: Realizing, Much too Late, Action must be Immediate", *Obesity*, Volume 25, No. 10, October 2018.
[50] Ibid.

Chapter 4: Alcohol and tobacco

The harmful use of alcohol and tobacco are two of the key risk factors for NCDs, contributing to cancer, and respiratory and cardiovascular diseases. Many countries have existing programmes to target adolescent drinking and smoking.

A September 2018 WHO report on adolescent alcohol-related behaviours in the WHO European region from 2002-14 found that, while alcohol use has declined among adolescents in the region, levels of consumption remain dangerously high.[51] One in ten young people in the region were regular weekly drinkers by the age of 15, including 9% of girls and 16% of boys in 2014, the report found. In addition, 28% of 15 year olds said they had started consuming alcohol at the age of 13 or younger. The same report found that gender differences in weekly drinking were already converging in Northern Europe.

Alcohol is a key risk factor for fatal and non-fatal accidents, suicide attempts, use of other substances and has links to riskier sexual behaviour, unintended pregnancy and poor academic outcomes. Studies have also demonstrated negative effects of early drinking on brain development, the September 2018 WHO report said, adding that "research has also shown that delaying the age at which young people take their first drink lowers their risk of becoming problem drinkers later in life."

Once again, linkage with other NCD risk factors is crucial, says Ms Frampton. "There is very little conversation about the correlation between stress and smoking in adolescents," she complains, noting that tobacco can be a way of self-medicating.

As far as tobacco consumption, with its 7m annual deaths a year,[52] is concerned, just over 24m young people aged 13-15 smoked cigarettes in 2000-17, or around 7% of the total age group, according to a WHO study published in 2018.[53] The study found that rates of smoking among boys were 9-10%, with the exception of the Eastern Mediterranean region, where there was a prevalence rate of 7.4%. For girls, cigarette smoking rates were highest in the American and European regions, at 9.7% and 8.6%, respectively. Girls in African countries had smoking rates that were half that of high-prevalence regions. Overall, girls in high-income countries had the highest rate of prevalence in the world, while the highest rate for boys was in the upper-middle-income group of countries.

Among the countries covered in the scorecard, Hungary and Sierra Leone have the highest prevalence of tobacco use among those aged 13-15, at 25% (2016 data, Hungary) and 23.5% (2008 data, Sierra Leone), respectively, according to the Global Youth Tobacco Survey.[54] Meanwhile, heavy episodic drinking among 15-19 year olds is most prevalent in Hungary and Russia (at 34.4% and 28.6%, respectively).[55]

Yet, while most countries in the scorecard have public awareness campaigns related to alcohol and tobacco, only half of these (Brazil, India,

[51] WHO, "Adolescent alcohol-related behaviours: trends and inequalities in the WHO European Region, 2002-2014", September 2018, http://www.euro.who.int/en/publications/abstracts/adolescent-alcohol-related-behaviours-trends-and-inequalities-in-the-who-european-region,-20022014-2018
[52] WHO, Tobacco, https://www.who.int/news-room/fact-sheets/detail/tobacco
[53] WHO, "WHO global report on trends in prevalence of tobacco smoking 2000-2025", second edition, pages 22-24, 2018, http://www.wpro.who.int/mediacentre/releases/2018/who_tobacco_trends.pdf
[54] WHO report on the global tobacco epidemic 2017, country profiles, http://www.who.int/tobacco/surveillance/policy/country_profile/en/; by country, http://apps.who.int/gho/data/view.main.A1048v
[55] WHO, Global Health Observatory data repository, 15-19 years old heavy episodic drinking (population), past 30 days by country, http://apps.who.int/gho/data/view.main.A1048v

Russia and the US) are specifically tailoring awareness programmes to settings relevant to young people, such as schools.

Strategies and policy

The majority of countries surveyed have comprehensive plans in place to reduce tobacco use, including a focus on adolescents. But only half of scorecard countries (Brazil, Ethiopia, India, Indonesia and the US) provide guidance on how to implement these programmes in schools, community or primary care settings. Meanwhile, the extent of restrictions on marketing of tobacco to young people varies significantly, as we discuss below.[56]

Most also require health warning labels on cigarette packages and anti-tobacco campaigns in the mass media; and seven out of ten also have active educational programmes about the harm of tobacco use in schools. Just two countries, Sierra Leone and South Africa, have more limited policies (Sierra Leone has mass-media campaigns and South Africa has tobacco warning labels).

In the case of alcohol use, more than half (six) of the scorecard countries have national awareness campaigns that include consumer warning and information on alcohol products, advertisements and containers, as well as teaching about the harms of alcohol use in schools. Just one scorecard country, Saudi Arabia, in which alcohol is illegal, has no national plan related to alcohol use; hence we did not score the country on this indicator.

When looking at the use of regulatory and other measures to control tobacco and alcohol use, a diverse picture emerges. While all of the scorecard countries have restrictions on advertising alcohol on television or at the point of sale (except Saudi Arabia, for the reason mentioned above), and seven impose excise taxes on beer, wine and spirits, just two countries (Brazil and India) have a national age limit for purchasing alcohol; individual states within the US impose their own age restrictions.

The scorecard uses four different measures to assess the countries' strategic approach to tobacco: national restrictions on direct advertising, existence of smoking cessation programmes; taxation of tobacco products; and national smoking bans in public places.

While most of the scorecard countries have national bans on the direct advertising of tobacco at the point of sale or on national and international television, just four countries (Brazil, Ethiopia, Russia and Saudi Arabia) impose fines on violators. Meanwhile, two of the scorecard countries with high rates of smoking, Indonesia and Sierra Leone, have no restrictions on tobacco advertising at all.

Only three countries have not put in place any smoking-cessation programmes, such as provision of nicotine replacement therapy that is at least partially covered on a national basis, and toll-free telephone quit lines (Ethiopia, Sierra Leone and South Africa). But only three countries get the highest score in this category thanks to offering at least partially funded smoking cessation support in primary care facilities (Brazil, India and the US).

Half of the scorecard countries tax tobacco products at a rate of 51-70%, according to the latest WHO data. Only Hungary imposes an even higher tax, exceeding 70% (the top rate endorsed by the WHO).[57] Just two countries, Ethiopia and Sierra Leone, impose no tax at all on tobacco products, while Saudi Arabia (33.3%) and the US (43%) impose rates below 50%.

[56] E Savell et al, "The environmental profile of a community's health: a cross-sectional study on tobacco marketing in 16 countries", *Bull World Health Organ* 2015;93:851–861, https://www.who.int/bulletin/volumes/93/12/15-155846.pdf?ua=1
[57] WHO, Tobacco Free Initiative (TFI), http://www.who.int/tobacco/economics/taxation/en/index1.html

A majority of countries have banned smoking in public places, including educational establishments, cafés, restaurants and public transport, with three countries (Brazil, India and Russia) also fining those who violate the bans. Three countries—Sierra Leone, South Africa and the US—do not have a national ban on smoking in public places, although such regulation tends to fall to states and local governments in the US.

Examples of campaigns and best practice

The WHO's so-called best buys for tackling NCDs—that is interventions considered most cost-effective and easy to implement—include the following: the setting of a minimum age for the purchase and consumption of alcohol; regulating the targeting of the younger demographic; prohibiting the sale of tobacco products to minors; and banning tobacco advertising.[58]

But, as is the case with other NCD areas, campaigns must be designed with the help of those in the target age group, Dr Rodriguez-Fernandez says.[59] "The problem is that you design programmes with policymakers or clinicians who have not been adolescents for 40 years or so, and the techniques they use

TABLE 5
Scorecard indicators on alcohol and tobacco

Indicators	Brazil	Ethiopia	Hungary	India	Indonesia	Russia	Saudi Arabia	Sierra Leone	South Africa	US
Existing national policy with focus on tobacco use	3	3	2	3	3	2	1	2	1	3
Existing national policy with focus on alcohol use	3	3	2	3	3	2	N/A	2	3	3
National awareness campaigns to reduce tobacco use	3	3	2	3	3	3	3	1	1	3
National awareness campaigns to reduce alcohol use	2	1	1	2	1	2	N/A	0	1	2
National strategies to reduce alcohol use	3	2	2	3	2	2	N/A	1	2	2
National restrictions on direct advertising of tobacco	3	3	2	2	0	3	3	0	1	2
Smoking cessation programmes	3	0	2	3	1	2	2	0	0	3
Taxation on tobacco products	2	0	3	2	2	2	1	0	2	1
National smoking bans in public places*	4	3	3	4	3	4	3	0	0	0

Key: Very high; Moderate; Low; Very low

Note: *Scores are based on the existence of a national smoking ban as reported by the WHO. However, some countries may operate these bans on a regional or state level.
Source: The Economist Intelligence Unit, Policy Scorecard on Preventing Non-Communicable Disease in Youth

[58] WHO, "Best buys and other recommended interventions for the prevention and control of noncommunicable diseases", updated (2017); and appendix 3 of the global action plan for the prevention and control of NCDs 2013-2020. http://www.who.int/ncds/management/WHO_Appendix_BestBuys.pdf?ua=1
[59] For some examples of such initiatives, see B Freeman, "New media and tobacco control", Tobacco Control, Vol. 21, No. 2, 2011, https://tobaccocontrol.bmj.com/content/21/2/139

are based on research or methods designed for adults," he adds. "The best approach would be to essentially copy what industry has used to penetrate that market. Look at tobacco companies—the way they reach adolescents is through music and things that aren't health-related."

In Indonesia, a programme called SmokeFree Agents uses Facebook to communicate with other adolescents to form weekend anti-tobacco campaigns that attract up to 3,000 young people at a time, he notes.[60]

Regional and income comparators

A closer look at the scorecard results enables us to draw a few conclusions about the relation between region and strategy. Not one of the three African countries has any kind of smoking cessation strategy in place, let alone one for adolescents, in spite of studies showing that smoking cessation programmes are particularly successful among boys, who have higher smoking rates in many African countries.[61]

The reasons for this gap are likely to differ from country to country, with rates of tobacco use by 13-15 year-olds ranging from 8.9% in Ethiopia, which has one of the lowest rates among the scorecard countries, to more than 20% among the same age group in wealthier South Africa and poorer Sierra Leone. Pressure from tobacco companies is clearly a factor. As part of global tobacco companies' growth strategies in sub-Saharan Africa, some companies have gone to court to block government efforts to regulate smoking. Sales strategies include vendors selling individual cigarettes for small amounts of money in kiosks, where sweets, biscuits and fizzy drinks are also for sale.[62]

In the case of alcohol strategies, the more interesting observation is the lack of easy categorisation of countries. Countries as diverse in income and region as Brazil and India have the strictest limitations on alcohol use, including national age limits for purchasing alcohol.

To be clear, the scorecard data do not always reflect the full story. Although Indonesia was one of the higher-scoring countries with regard to its national plan on combatting tobacco use, it is one of the few countries that has not signed up to the Convention Framework on Tobacco Control, Dr Sawyer notes. There are also gaps in the implementation of the national strategy, which in some cases requires passage of laws by local governments.[63] She speculates that although the rate of male smoking in Indonesia is among the highest in the world, rates of female smoking are extremely low, meaning that combined data effectively mask the scale of the problem. The government also continues to support tobacco farming and has refused to raise taxes on tobacco products to the levels recommended by the WHO, Ms Nugent notes; the tax rate is at 57.4%, according to the WHO. The RTI report on the investment case for reducing NCD risk factors found that each 10% increase in price leads to a 5.6% decline in smoking prevalence, while point-of-sale advertising bans lead to a 27% reduction in smoking.[64]

[60] See https://www.facebook.com/SmokeFreeAgents/
[61] V Winkler, Y Lan et al, "Tobacco prevention policies in west-African countries and their effects on smoking prevalence", *BMC Public Health*, December 8th 2015.
[62] S Boseley, "Threats, bullying, lawsuits: tobacco industry's dirty war for the African market", *The Guardian*, July 12th 2017.
[63] Tobacco Control Laws, Legislation by country, Indonesia, https://www.tobaccocontrollaws.org/legislation/country/indonesia/summary
[64] R Nugent, J Hale, et al, "Research Brief: Investment Case for Reducing Noncommunicable Disease Risk Factors in Adolescents", page 4.

Chapter 5: Sexual and reproductive health

The importance of promoting sexual and reproductive health and rights (SRHR) for the ability to curtail NCD rates cannot be underestimated. As adolescents become sexually active, they should have access to the information and services they need, especially as sexually transmitted diseases and risky sexual behaviour have a heavy impact on adolescents during years of major development. At a later point in the life course, riskier behaviours can contribute to mental-health problems and substance abuse with all of their related health ramifications.

Moreover, in regions where early marriage is common, such as South Asia and sub-Saharan Africa, the consequences for the next generation are immense: early childbearing has a knock-on effect on the nutrition, educational life chances and even mental health of the children of adolescent mothers, while maternal and child nutrition, in turn, is a significant determinant of NCD risk later in life. The World Bank has estimated that by 2030 the annual benefits from ending child marriage, reducing population growth, and cutting early childhood mortality and stunting could reach US$664bn.[65]

The Lancet Commission has noted that "a longer adolescence leads to healthier growth, particularly for girls without the competing nutritional demands of early pregnancy."[66] Tellingly, the disparity between high-income countries, where only a quarter of girls have a child by the age of 25 and low-income countries, where the comparable figure is 80%,[67] highlights the extent to which different parts of the world will benefit from different strategies.

Strategies and policy

The scorecard evaluated countries on the existence of a national policy focusing on sexual and reproductive health, with countries receiving full points if they had existing policies focusing on sexual and reproductive health, including separate policies focusing on adolescents, as well as guidance on how to implement programmes in different settings, such as schools, community and primary care.

Nine out of the ten countries in the scorecard receive full scores for this category, with the exception of Saudi Arabia, which scored zero, possibly due to cultural taboos affecting discussion of sexuality.

A majority of countries also receive full marks for the presence of national sexual and reproductive health awareness campaigns and sexual and reproductive health education in schools. The exceptions are Hungary and Russia, which do not have clear guidance on national awareness campaigns, and Saudi Arabia, which has no awareness programmes relating to sexual health.

Sexual-health strategies include national screening programmes on cervical cancer and inclusion of the HPV vaccine on national immunisation programmes; high-risk HPV can increase the risk of cancer, such as cervical cancer. Just half of the countries in the scorecard (Brazil, Hungary, Russia, South Africa and the US) got full marks for the strategies they have implemented, while an additional three (Ethiopia, India and Indonesia) do not include HPV vaccine in their immunisation

[65] Q Wodon et al, "Economic Impacts of Child Marriage: Global Synthesis Report", World Bank, 2017.
[66] G C Patton, C A Olsson, et al, "Adolescence and the next generation," *Nature*, 2018.
[67] Ibid.

programmes, although they have national screening programmes. Saudi Arabia and Sierra Leone lack either strategy.

Sexual health promotion must be included within the wider context of rights and inequalities, says Laura Laski, senior adviser and freelance consultant at the World Health Organisation and other UN organisations, and former head of sexual and reproductive health at the UN Population Fund (UNFPA). "With sexuality education programmes one of the most important things is not learning about physiology, but about gender inequalities and gender differentiation," she explains. "Sexual and reproductive health depends on teachers themselves because they have a lot of prejudice about it. One of the most difficult things is making teachers teach what they have to teach and not their own values."

Examples of campaigns and best practice

Non-profit organisations operating in the SRHR space have gained significant experience in trying to change behaviour and focus on increasing services, lessons that policymakers confronting NCDs more widely can learn from, according to Shakira Choonara, a public health expert and One Young World scholar in South Africa and former youth advocacy officer for the AIDS Trust.

Integrating NCD prevention within youth-focused SRHR programmes could be highly beneficial, create synergies and boost efficiency. "There is a lot of fragmentation between NCD units and SRHR units, different funding and programmes—and they hardly overlap," Ms Choonara says.

TABLE 6
Scorecard indicators on sexual and reproductive health

Indicators	Brazil	Ethiopia	Hungary	India	Indonesia	Russia	Saudi Arabia	Sierra Leone	South Africa	US
Existing national policy with focus on sexual and reproductive health	3	3	3	3	3	3	0	3	3	3
National awareness campaigns to promote sexual and reproductive health	2	2	1	2	2	1	0	2	2	2
National strategies to promote sexual and reproductive health	2	1	2	1	1	2	0	0	2	2

Key: Very high | Moderate | Low | Very low

Source: The Economist Intelligence Unit, Policy Scorecard on Preventing Non-Communicable Disease in Youth

Moreover, the NCD agenda can take lessons from SRHR activists. Ms Choonara points to Women Deliver, a global advocate for gender equality and the health, rights and wellbeing of girls and women as a successful network that builds partnerships. "They run a very vibrant [campaign] of advocacy building. I think capacity-building is a very important need in NCDs." The organisation includes 700 youth advocates from more than 138 countries.[68]

The best programmes have also learned how to reach adolescents successfully, not through phone apps or other "cool" programmes, Ms Choonara says, but through social media, such as a Facebook page created in Botswana for young people to discuss sex; the page contains a reporting tool for people who have been victims of sexual violence, as well as fashion-related posts.

In a 2014 article the WHO found that HPV vaccinations, which target girls aged 9-13 years old, can be successfully linked with other health interventions to "foster synergies"; in Bhutan and Uganda, the vaccine was combined with deworming treatment, while in Malaysia and Panama, the vaccine was integrated into routine adolescent school health programmes.[69]

Outside of sexual and reproductive health awareness programmes and immunisation initiatives, there are other ways that countries around the globe are seeking to address issues in adolescence that could have a knock-on effect in adulthood.

In the US state of Kentucky, the Kentucky Association of Sexual Assault Programs runs school programmes that teach high-school and college students how to recognise sexual assault and how to intervene if they see such behaviour. A 2017 study surveyed more than 89,000 students who went through the programme and found that the bystander training cut the number of sexual violent events, including a significant reduction in alcohol and drug-fuelled incidents.[70]

In Ethiopia, the Population Council has been working with vulnerable adolescent girls and young women in urban and rural areas since 1993, providing girls' clubs and mentors in safe places alongside education about HIV and reproductive health and life skills. The programmes have been credited with delaying marriage and expanding school enrolment, as well as increasing knowledge about HIV and counselling and testing options.[71] The UN Inter-Agency Support Group has run similar programmes with indigenous groups in Guatemala.[72]

Regional and income comparators

A look at the scorecard results suggests that the scorecard countries take a more similar attitude to sexual and reproductive health than to other NCD risk factors, with virtually all of them recognising the need for specific sex and reproductive health programmes targeted at young people.

With the exception of Saudi Arabia, a socially conservative country that has no national policies in place to address sexual and reproductive health, there are few obvious

[68] Women Deliver, https://womendeliver.org/youth/young-leaders-program-detail/
[69] WHO, Options for linking health interventions for adolescents with HPV vaccination, 2014, http://www.who.int/immunization/research/development/brief_note_15_july_2014.pdf. See also: N Broutet, N Lehnertz et al, "Effective Health Interventions for Adolescents that could be integrated with Human Papillomavirus Vaccination Programs", *Journal of Adolescent Health*, Vol. 53, February 26th 2013.
[70] A L Coker, H M Bush et al, "RCT Testing Bystander Effectiveness to Reduce Violence", *The American Journal of Preventive Medicine*, Vol. 52, Issue 5, May 2017.
[71] Population Council, Ethiopia, https://www.popcouncil.org/research/ethiopia
[72] UN, Sexual and reproductive health and rights of indigenous peoples, thematic paper towards the preparation of the 2014 World Conference on Indigenous Peoples, June 2014, http://www.un.org/en/ga/president/68/pdf/wcip/IASG%20Thematic%20Paper_Reproductive%20Health%20-%20rev1.pdf

regional distinctions in those countries that run HPV vaccination programmes and those that do not. Instead, there appear to be clear divisions by income, with most middle- and higher-income countries (such as Brazil, Hungary, Russia and the US) including HPV in their immunisation schedule, while low-income countries (Ethiopia and Sierra Leone) do not.

"The biggest barrier on the African continent is that healthcare and education have been de-linked."

Shakira Choonara, public health expert, member of African Union Youth Advisory Council and One Young World Scholar, South Africa

One of the biggest challenges for many developing countries is that those looking to promote school-based sexual health programmes must work with two effectively siloed ministries. "The biggest barrier on the African continent is that healthcare and education have been de-linked," Ms Choonara explains.

Chapter 6: Mental health

Mental health is frequently under-prioritised in many healthcare systems, and adolescent-focused mental-healthcare services and practitioners are in especially short supply, even in wealthy countries. According to the WHO, mental-health conditions constitute 16% of the global burden of disease and injury in the 10-19 age group. Depression is the ninth leading cause of illness and disability among adolescents globally, while anxiety is the eighth leading cause. Suicide is the third leading cause of death in 15-19 year olds. Close to 90% of the world's adolescents live in low- or middle-income countries, and more than 90% of adolescent suicides take place among young people living in those countries.[73]

"If we are talking about the burden of NCDs during adolescence itself, then the burden of mental health is going to be of great significance," says Dr Sawyer. This is in comparison with tobacco use, "which has huge effects on later adult health but creates little disease burden during adolescence itself. Mental health conditions are both an NCD during adolescence as well as being a risk factor for other NCDs and risk factors: rates of smoking, obesity, intimate partner violence and poor sexual health are all higher in those with mental-health conditions."

Given the rapid changes that are a hallmark of adolescence, mental-health problems frequently start at this stage of life, with an estimated half of all lifetime cases of mental illness beginning by age 14 and three-quarters by age 24.[74] Failure to address them can lead to more serious problems in adulthood. Between 10% and 20% of adolescents experience mental-health conditions, frequently depression and anxiety, and half of these start by 14 years of age, but most are undetected and untreated at this point, according to a WHO fact sheet on adolescent mental health, which adds that promotion and prevention related to mental health are "key to helping adolescents thrive".[75] Stigma, discrimination or exclusion or lack of access to adequate support services can also put some adolescents at greater risk of mental-health conditions. Those who are affected are more vulnerable to social exclusion, discrimination, educational difficulties and physical ill-health.

Strategies and policy

Most countries in the scorecard have national policies that focus on mental health, including specific programmes targeting adolescents; six countries, including both low-income and high-income countries (Ethiopia, Hungary, India, Russia, South Africa and the US), also provide guidance on implementing these programmes in different settings, including schools and community and primary-care health

[73] WHO, "Adolescent mental health: key facts", September 18th 2018, http://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health
[74] National Alliance on Mental Illness, Mental Health Facts: Children & Teens, https://www.nami.org/getattachment/learn-more/mental-health-by-the-numbers/childrenmhfacts.pdf
[75] WHO, "Adolescent mental health: key facts", September 18th 2018, http://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health

programmes. Only Saudi Arabia and Indonesia fail to have any national plans in place, due to cultural stigmas.

"The biggest areas are stigma, access and awareness," says Janis Whitlock, a research scientist and associate director of the Bronfenbrenner Center for Translational Research at Cornell University in New York. "Even fairly well-educated adults are not well-equipped to differentiate what are the normal ups and downs of adolescence and what is a mental-health condition."

All ten scorecard countries have national mental health awareness campaigns in place, and with the exception of Indonesia, Saudi Arabia and Sierra Leone, all of these countries teach awareness of mental health in schools. Yet awareness of mental health is not the same as comprehensive knowledge, or literacy, about the potential impact of mental-health conditions, which is a precursor for providing individuals with the necessary support they need.[76]

Yet, when it comes to implementing care for mental-health conditions, fewer governments are committing sufficient investment. Just six scorecard countries (Brazil, India, Russia, Saudi Arabia, South Africa and the US) have both standalone mental health legislation and evidence of community-based mental health counselling services. Ethiopia, Hungary and Sierra Leone lack the legislation, while Indonesia lacks the counselling services.

Ms Whitlock observes that high levels of out-of-pocket (OOP) expenses in many of the lower-income scorecard countries make it even less likely that mental-health conditions in young people will be sufficiently addressed. According to data from the World Bank, 65% of total health spending in India is spent OOP, while it is 48% in Indonesia and 38% in Ethiopia.

Examples of campaigns and best practice

A number of studies and mental-health campaigns have attempted to improve the

TABLE 7
Scorecard indicators on mental health

Indicators	Brazil	Ethiopia	Hungary	India	Indonesia	Russia	Saudi Arabia	Sierra Leone	South Africa	US
Existing national policy with focus on mental health	2	3	3	3	0	3	0	2	3	3
National awareness campaigns to promote mental health	2	2	2	2	1	2	0	1	2	2
National strategies to promote mental health	2	1	1	2	1	2	2	1	2	2

Key: Very high | Moderate | Low | Very low

Source: The Economist Intelligence Unit, Policy Scorecard on Preventing Non-Communicable Disease in Youth

[76] L T Lam, "Mental health literacy and mental health status in adolescents: a population-based survey", *Child and Adolescent Psychiatry and Mental Health* 2014, 8:26, https://capmh.biomedcentral.com/articles/10.1186/1753-2000-8-26.

evidence base for what solutions work and how mental-health problems can underpin other risk factors for developing NCDs in later life.

A recently launched Indian birth cohort study, Stress Responses in Adolescence and Vulnerability to Adult Non-communicable disease, found evidence that poor nutrition in pregnant mothers can result in abnormal cortisol and cardiovascular stress responses in adolescents.[77]

The study, which looked at three birth cohorts in Mysore, Mumbai and Pune, noted that the prevalence of NCDs in India is growing rapidly, with around 80m people in the country expected to develop type 2 diabetes by 2030. Greater understanding of these factors could help lead to interventions to ameliorate their effects, the researchers proposed. In addition, the study will also test whether nutritional supplementation during adolescence is associated with improved stress responses in young adults whose mothers suffered from poor nutrition. In the latter case, researchers plan to measure NCD risk markers and stress responses at different ages.[78]

In the US, Ms Whitlock notes, many of the best mental-health awareness campaigns focus on emotional literacy; developing the vocabulary to describe feelings and emotions that might be unfamiliar is one of the biggest obstacles to overcome before problems can be treated, she explains.

Meanwhile, digital communication, which many experts cite as a useful tool for engaging adolescents and transmitting information, can be a double-edged sword when it comes to mental health. Online content aimed at young people has glamourised both suicide and eating disorders, and can target the emotionally vulnerable around the globe, suggesting that more regulation and self-policing by media companies may need to be part of the solution.

"You have to appeal to the industry, to makers of platforms to put in safeguards and flags and notifications, but there are a billion ways to get around it," Ms Whitlock warns. "It requires more understanding of human behaviour and human limitations and has to happen at the individual and family levels. It's too easy to get into really bad places too fast. We often look at teenagers and say, what's wrong with them, but they are canaries in the coal mine."

Regional and income comparators

There is no clear pattern to the commitment of scorecard countries to invest in mental-health education or care as a whole, although middle- to higher-income countries generally provide a more comprehensive set of interventions, including ones tailored to young people.

Yet clear gaps in the availability of mental-health programmes and treatment for adolescents persist, even within wealthier countries.

In the UK, for example, less than 1% of public spending via the National Health Service (NHS) goes to mental-health services for children and adolescents.[79] In other parts of the world, where stigma and taboos about mental-health conditions are more of a concern, there is often even less awareness.

[77] G V Krishnaveni, K Kumaran et al, "Life course programming of stress responses in adolescents and young adults in India: Protocol of the Stress Responses in Adolescence and Vulnerability to Adult Non-communicable disease", Wellcome Open Research, May 10th 2018.
[78] Ibid.
[79] B Dubicka and T Bullock, "Mental health services for children fail to meet soaring demand", BMJ 2017; 358, https://www.bmj.com/content/358/bmj.j4254

Conclusion and outlook

While most countries in the scorecard have at least taken steps to address the range of risk factors around NCDs, a number of challenges remain. Policymakers need to do a better job at bringing young people to the table in order to design programmes that will be influential and sustainable in the long term. Governments also need to be willing to both call out and regulate industry where their policies are in conflict with national NCD guidelines and to work with them when partnerships can be mutually beneficial.

Meanwhile, for low- and middle-income countries where the disease burden is moving from infectious disease toward NCDs, investment in strengthening health systems will require a very different skill set, one that engages patients on a more equal basis, Dr Sawyer says. "Infectious disease care was much more episodic around brief periods of care. [NCDs] are around continuity of care, alliances and collaboration with patients. This requires true partnerships in healthcare and, for that, hierarchical systems need to change." This will be especially important in order to engage adolescents.

At the same time, Dr Nishtar notes that adolescence has only been a focus of NCD campaigns for a relatively short period of time. While several years is a short period for measuring outcomes, it is a comparably long time for measuring progress indicators, and the scorecard shows a level of provisional building of an infrastructure for addressing the problem. "The establishment of focus and institutional arrangements and mobilisation of finances and monitoring—you cannot have an impact on outcomes unless you put those processes in place," Dr Nishtar adds.

Yet policymakers need to continue to build on these foundations, revising NCD policies until they are adapted to the specific needs of adolescents.

Summary of evidence base and best practice

One of the key conclusions of this study is that taking a broader approach to NCDs that ranges from tobacco and second-hand smoke to self-harm and obesity is likely to have greater returns because many of these behaviours have similar drivers and could indicate increased risks for the others. In addition, greater integration of NCD prevention into other programmes, such as HIV prevention, treatment and care,[80] is also potentially beneficial, and is likely to entail a strengthening of primary health services across the globe.

One example is taking place in India, where the Ministry of Health and Family Welfare in 2017 launched the Rashtriya Kishor Swasthya Karyakram programme for 10-19 year olds, targeting nutrition, reproductive health and substance abuse, among other initiatives.[81] Another is Moldova, a low-income Eastern European country that rolled out comprehensive adolescent health services that include physical and mental healthcare, as well as sexual and reproductive healthcare.[82]

[80] L Brumana, A Arroyo et al, "Maternal and child health services and an integrated life-cycle approach to the prevention of NCDs", *British Medical Journal of Global Health*, 2017;2.
[81] Ministry of Health and Family Welfare, National Health Mission, Rashtriya Kishor Swasthya Karyakram, http://nhm.gov.in/rashtriya-kishor-swasthya-karyakram.html
[82] UNFPA "Moldova is one of the first countries in Europe to adopt a new National Programme on Sexual and Reproductive Health and Rights", May 24th 2018, https://moldova.unfpa.org/en/news/moldova-one-first-countries-europe-adopt-new-national-programme-sexual-and-reproductive-health; and Swiss Agency for Development and Cooperation, Youth-Friendly Health Services (YFHS), August 2015, https://www.eda.admin.ch/dam/deza/en/documents/aktuell/agenda/20150813-factsheet-projekt-YFHS_EN.pdf

Looking to areas where adolescents spend much of their time and receive outside support also underpins evidence that school-based and community-based prevention are likely to deliver strong rewards.

"There has been much discussion about the opportunity for schools to be a site for health and wellbeing, not just for a place to deliver health-promoting programmes. There are other opportunities as well, with some very interesting models to think about for health promotion as well as treatment services," Dr Sawyer observes.

Randomised trials as far afield as London and Bihar, India, meanwhile, have tested different models of whole-school interventions with "statistically significant" findings, she adds. In Bihar, where the intervention was around both educational engagement and health outcomes, the project funded a group of university-educated trainers to work with classroom teachers to promote emotional health and wellbeing, with impressive gains for education as well as health.[83]

This also suggests that a multi-sector approach to addressing the various determinants of health—including poverty alleviation, urban planning and evaluation of the built environment—will need to be in place in order to support prevention programmes.

Takeaways for policymakers

It is also vital to recognise not only the distinctions between countries and regions, but also those between populations within countries. In the case of sexual and reproductive health, for example, the Lancet Commission notes that "for poor and socially marginalised adolescents in higher-income countries, who often have high and early fertility, responses may need to be similar to those for adolescents growing up in low-income countries."[84] Similar observations can be made for obesity and malnutrition linked to inequality.

In addition, it is important for policymakers to look outside the traditional healthcare system for examples of alternative ways of engaging with young people. This is likely to involve not only making better use of corporate ties and social media, but also including adolescents in discussion and formulation of policies.

Governments will also need to integrate campaigns relating to the key NCD risk factors with a broader evaluation of environmental and social determinants of health and address them accordingly.

This study has attempted to make a contribution to highlighting the scale of the problem of NCD risk factors in adolescents and some of the best practices that can help to address them. But there is a need for better further research and data collection on the scale of risk factors among adolescents and on the programmes that have been shown to work, with evidence that supports them.

[83] S Shinde et al, "Promoting school climate and health outcomes with the SEHER multi-component secondary school intervention in Bihar, India: a cluster-randomised controlled trial", *The Lancet*, 2018; 392: 2465–77, https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(18)31615-5.pdf.
[84] G C Patton, et al, "Adolescence and the next generation", page 6.

Appendix: Scorecard methodology

To assess policy towards non-communicable disease (NCD) prevention in youth, the healthcare division at The Economist Intelligence Unit developed a bespoke framework of indicators to compare policy approaches and other initiatives for addressing NCD risk factors in ten countries.

The countries evaluated in the scorecard include three high-income countries (Hungary, Saudi Arabia and the US), five middle-income countries (Brazil, India, Indonesia, Russia and South Africa) and two low-income countries (Ethiopia and Sierra Leone), which were selected to ensure geographic and economic diversity.

The EIU Healthcare practice initially reviewed the literature to identify existing relevant frameworks previously used to evaluate policy approaches for the prevention of NCDs in youth. Using the key findings from the retrieved documents, a draft scorecard was developed. The draft scorecard was validated by an expert advisory board held virtually. The expert panel included:

- Alyssa Frampton, youth health advocate and public policy student, Canada
- Priya Kanayson, senior advocacy officer, NCD Alliance
- Toshiko Kaneda, senior research associate, Population Reference Bureau
- Nandita Murukutla, vice-president, Global Policy and Research, Vital Strategies
- Rachel Nugent, vice-president, Global NCDs, RTI International
- Mary Penny, director and senior researcher, Instituto de Investigacion Nutricional, Lima, Peru, and the Young Lives project
- Rodrigo Rodriguez-Fernandez, global medical director for NCDs, International SOS
- Susan Sawyer, director, Centre for Adolescent Health, Royal Children's Hospital, Melbourne, Australia, and professor of adolescent health, University of Melbourne

Based on recommendations from the expert group, the most relevant indicators to assess prevention of NCDs in youth were determined for each of the study domains. The resulting framework combines 23 indicators. The full index methodology and Excel spreadsheet with results can be downloaded from the content hub for this research project.[85]

Additionally, a set of 20 background indicators were considered in the study to provide context, but are not scored. These indicators include context on the health system, epidemiology and risk factors, social determinants of health, and environmental indicators in each country. These indicators were identified by The Economist Intelligence Unit and the expert panel as key aspects that may be associated with differing levels of performance in the prevention of NCDs in youth, but do not indicate cause and effect with regard to performance. As such, the background indicators are not scored.

Populating the scorecard

A range of international and national sources were used for the data collection, in addition

[85] Exact URL to be added later

to secondary research, to populate the scorecard.

All of the 23 indicators were qualitative. Scores were assigned according to a specific set of research criteria and the scoring guidelines built for each indicator. The qualitative indicators were scored on an integer basis (0-1, 0-2, 0-3, 0-4). A large majority of the data were obtained from WHO databases.

Where appropriate, specific sources were identified, such as for indicator "national adolescent health policy/strategy", where The Economist Intelligence Unit searched for published national policy documents covering adolescent health.

Scores across indicators were checked for consistency across countries before the scorecard was populated with final scores.

The Economist INTELLIGENCE UNIT

LONDON
20 Cabot Square
London, E14 4QW
United Kingdom
Tel: (44.20) 7576 8000
Fax: (44.20) 7576 8500
Email: london@eiu.com

GENEVA
Rue de l'Athénée 32
1206 Geneva
Switzerland
Tel: (41) 22 566 2470
Fax: (41) 22 346 93 47
Email: geneva@eiu.com

NEW YORK
750 Third Avenue
5th Floor
New York, NY 10017
United States
Tel: (1.212) 554 0600
Fax: (1.212) 586 1181/2
Email: americas@eiu.com

DUBAI
Office 1301a
Aurora Tower
Dubai Media City
Dubai
Tel: (971) 4 433 4202
Fax: (971) 4 438 0224
Email: dubai@eiu.com

HONG KONG
1301 Cityplaza Four
12 Taikoo Wan Road
Taikoo Shing
Hong Kong
Tel: (852) 2585 3888
Fax: (852) 2802 7638
Email: asia@eiu.com

SINGAPORE
8 Cross Street
#23-01 Manulife Tower
Singapore
048424
Tel: (65) 6534 5177
Fax: (65) 6534 5077
Email: asia@eiu.com