

Large cohort studies such as this one based on historical records give us further insights into the early origins of diseases that emerge in mid-life and late-life, something that is not yet possible in modern cohort studies. In the future, it will be interesting to investigate whether the identified associations hold for cardiovascular disease morbidity, and if they differ for women. The narrowing down of the time period to BMI change during adolescence in relation to cardiovascular mortality represents a step forward in our understanding of how and when cardiovascular disease risk originates, and highlights that this might be a pivotal age at which to implement prevention strategies.

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I declare no competing interests.

- 1 Ng M, Fleming T, Robinson M, et al. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet* 2014; **384**: 766–81.
- 2 Wang H, Naghavi M, Allen C, et al. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980–2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet* 2016; **388**: 1459–544.
- 3 Baker JL, Olsen LW, Sørensen TIA. Childhood body-mass index and the risk of coronary heart disease in adulthood. *N Engl J Med* 2007; **357**: 2329–37.
- 4 Twig G, Yaniv G, Levine H, et al. Body-mass index in 2.3 million adolescents and cardiovascular death in adulthood. *N Engl J Med* 2016; **374**: 2430–40.
- 5 Tirosh A, Shai I, Afek A, et al. Adolescent BMI trajectory and risk of diabetes versus coronary disease. *N Engl J Med* 2011; **364**: 1315–25.
- 6 Ohlsson C, Bygdell M, Söndén A, Rosengren A, Kindblom J M. Association between excessive body-mass index increase during puberty and risk of cardiovascular mortality in adult men: a population-based cohort study. *Lancet Diabetes Endocrinol* 2016; published online Nov 1. [http://dx.doi.org/10.1016/S2213-8587\(16\)30273-X](http://dx.doi.org/10.1016/S2213-8587(16)30273-X).
- 7 Kuczmarski RJ, Ogden CL, Grummer-Strawn LM, et al. CDC Growth Charts: United States. Advance data from vital and health statistics; no 314. Hyattsville, Maryland: National Center for Health Statistics, 2000.
- 8 Abraham S, Collins G, Nordsieck M. Relationship of childhood weight status to morbidity in adults. *HSMHA Health Rep* 1971; **86**: 273–84.
- 9 Day FR, Elks CE, Murray A, Ong KK, Perry JR. Puberty timing associated with diabetes, cardiovascular disease and also diverse health outcomes in men and women: the UK Biobank study. *Sci Rep* 2015; **5**: 11208.



Obesity and the health of future generations

Published Online
October 12, 2016
[http://dx.doi.org/10.1016/S2213-8587\(16\)30098-5](http://dx.doi.org/10.1016/S2213-8587(16)30098-5)

See *Series* pages 1025 and 1037

See *Online/Series*
[http://dx.doi.org/10.1016/S2213-8587\(16\)30107-3](http://dx.doi.org/10.1016/S2213-8587(16)30107-3) and
[http://dx.doi.org/10.1016/S2213-8587\(16\)30108-5](http://dx.doi.org/10.1016/S2213-8587(16)30108-5)

For the Sustainable Development Goals see <https://sustainabledevelopment.un.org>

The prevalence of obesity in women of reproductive age around the world is increasing in both low-to-middle-income and high-income populations, and is a concern for the health of at least two generations. It not only affects the woman's health, by increasing her risk of gestational diabetes and, longer-term, type two diabetes and cardiovascular disease, but also places her offspring at risk, particularly of developing childhood obesity and its later consequences, and so the cycle repeats. The alarming rise in the prevalence of childhood obesity led WHO's Director-General to establish a Commission on Ending Childhood Obesity, which reported to the World Health Assembly in May, 2016. The Commission's report¹ stressed the need for concerted and sustained action, not only in childhood but also earlier in the life course—ie, in the mother (and father) both before and during pregnancy. The *Series* on preconception and maternal obesity in *The Lancet Diabetes & Endocrinology* suggests new directions that such an initiative could take.

The papers in the *Series* emphasise the scale of the problem² and the consequences for children.³ Although the focus of the *Series* is on prevention rather than

treatment, Ma and colleagues⁴ stress the need for early intervention to curb the rising incidence of conditions such as gestational diabetes, a rapidly increasing aspect of the transgenerational passage of obesity. Although interventions to reduce weight or limit weight gain in pregnancy have not so far met with much success in reducing risk of high birthweight or other adverse pregnancy outcomes, longer-term consequences for offspring are now being followed up.

The shifting focus to the preconception period accords with other global initiatives. The UN General Assembly proclaimed in April, 2016, a Decade of Action on Nutrition,⁵ calling upon governments to address overweight as well as underweight in children younger than 5 years as an important step to reversing the rising burden of diet-related non-communicable diseases in all age groups. This initiative draws upon targets identified in the Sustainable Development Goals (target 2.2), calling for action to “by 2030 end all forms of malnutrition, including achieving by 2025 the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and

lactating women, and older persons". Broader issues to be addressed at this period in the life course are also highlighted in the UN Global Strategy on Women's, Children's and Adolescents' Health.⁶

However, taking these initiatives forward is not without problems. The authors of the final paper⁷ in the Series note that public health programmes focusing on pre-conception for parents and their future children are not generally thought to require special consideration. Adolescents and young adults are usually assumed to be generally healthy,⁸ and this group seldom accesses health-care services. Although they might not show overt signs of disease, many young people (ie, aged 15–24 years) are on a rising trajectory of risk. Nonetheless, young adulthood is a period when lifelong health behaviours and habits can be established and modified.

These problems are even more pressing in hard-to-access members of the young population, such as those of low socioeconomic status or educational attainment, migrants, and displaced groups. To motivate these populations to prepare for pregnancy and parenthood necessitates an entirely new approach, including information-sharing with the aim of engaging their interest and encouraging them to join in a new initiative, political will to provide capacity, and the development of opportunities for change. The approach is both top-down and bottom-up, but, even more importantly, requires something in between which young people help to create themselves. If at present many young people do not seem to care about their health or view it as a low priority, perhaps they have not been given clear information about what they can do to optimise their health for themselves and their children.

All societies owe their adolescents the chance to make their future healthier. Additionally, the political leaders

who have committed to the new Global Strategy for Women's, Children's and Adolescents' Health must give adolescent health priority in national health strategies, plans, and budgets. Only these actions will enable the transformation required.

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MH is supported by the British Heart Foundation. We declare no competing interests.

- 1 Commission on Ending Childhood Obesity. Ending childhood obesity. www.who.int/entity/end-childhood-obesity/final-report/en/ (accessed July 5, 2016).
- 2 Poston L, Caleyachetty R, Cnattingius S, et al. Preconceptional and maternal obesity: epidemiology and health consequences. *Lancet Diabetes Endocrinol* 2016; published online Oct 12. [http://dx.doi.org/10.1016/S2213-8587\(16\)30217-0](http://dx.doi.org/10.1016/S2213-8587(16)30217-0).
- 3 Godfrey KM, Reynolds RM, Prescott SL, et al. Influence of maternal obesity on the long-term health of offspring. *Lancet Diabetes Endocrinol* 2016; published online Oct 12. [http://dx.doi.org/10.1016/S2213-8587\(16\)30107-3](http://dx.doi.org/10.1016/S2213-8587(16)30107-3).
- 4 Ma RCW, Schmidt MI, Tam WH, McIntyre HD, Catalano PM. Clinical management of pregnancy in the obese mother: before conception, during pregnancy, and post partum. *Lancet Diabetes Endocrinol* 2016; published online Oct 12. [http://dx.doi.org/10.1016/S2213-8587\(16\)30278-9](http://dx.doi.org/10.1016/S2213-8587(16)30278-9).
- 5 UN General Assembly. United Nations Decade of Action on Nutrition (2016–2025) (A/70/L.42). <http://reliefweb.int/sites/reliefweb.int/files/resources/N1608648.pdf> (accessed July 6, 2016).
- 6 UN. The global strategy for women's, children's and adolescents' health (2016–2030). New York, NY: Every Woman Every Child, 2015.
- 7 Hanson M, Barker M, Dodd JM, et al. Interventions to prevent maternal obesity before conception, during pregnancy, and post partum. *Lancet Diabetes Endocrinol* 2016; published online Oct 12. [http://dx.doi.org/10.1016/S2213-8587\(16\)30108-5](http://dx.doi.org/10.1016/S2213-8587(16)30108-5).
- 8 Office of the High Commissioner for Human Rights. General Comment 4 (2003) on the United Nations Convention on the Rights of the Child (1990) has in its introduction the statement that adolescents 'in general are a healthy population group'. <http://www.ohchr.org/Documents/Issues/Women/WRGS/Health/GC4.pdf> (accessed July 5, 2016).

Incentives in workplace wellness programmes

Wellness programmes have become a primary way that employers aim to prevent obesity, diabetes, and other lifestyle diseases among their workers. Employers have spent generously on these programmes, lured not only by the potential health gains but also by the potential for a more productive and happier workforce. Employers in the USA, where most health insurance is obtained through employment, have also turned to

wellness programmes to control medical costs and health insurance premiums.

One increasingly popular component of wellness programmes is the use of monetary incentives to reward or penalise workers for participating in wellness activities or achieving particular health outcomes. By 2015, more than half of large employers in the USA offered incentives through a wellness programme.^{1,2}

Published Online
August 8, 2016
[http://dx.doi.org/10.1016/S2213-8587\(16\)30186-3](http://dx.doi.org/10.1016/S2213-8587(16)30186-3)