

# Social inequalities, global public health, and cancer

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## Introduction

The World Health Organization and the Government of Uruguay held the Global Conference on Noncommunicable Diseases (NCDs) in Montevideo in October 2017, a most welcome initiative. The aim was to prepare for the third United Nations General Assembly high-level meeting on NCDs, another welcome development. At the Montevideo summit we discussed strategies to reduce the global burden of NCDs by both prevention and treatment. Inequalities in the burden of NCDs were not a strong feature of the meeting, however. They surfaced prominently to the extent that universal health coverage aims to deal with inequalities in access to health care; out-of-pocket payments for medical care can, and do, impoverish people globally. To avoid social in-

equalities in the occurrence of NCDs being the silent guest at the table, there but not openly acknowledged, I was invited to speak at the opening experts' plenary. I began along the following lines.

“NCDs are a global health problem. One purpose of our meeting here in Montevideo is to plan for an NCD summit to be held at the United Nations in New York in September 2018. If you attend that summit and, while there, go to Central Park for a little exercise in green space – good for mental as well as physical health – you may find your life at risk. Mown down by hordes of high-income joggers.”

Much as I applaud people taking responsibility for their health, these high-income New Yorkers are atypical. Globally, the burden of NCDs is in middle-income and, increasingly,

low-income countries. Within countries, the so-called diseases of affluence are no longer; the lower people are in the social hierarchy, the higher their risk of NCDs. We cannot deal with NCDs without dealing with the social determinants of health inequalities.

There is a rumour going around that poor people are poor because they make poor choices, and that poor people are unhealthy because they make unhealthy choices. This rumour is, very largely, a myth. It has the causal connection backwards. More accurately, it is not mythical that the rumour exists – I read it in the press nearly daily – but the evidence points the other way. It is not poor choices that lead to poverty but poverty that leads to poor choices. An Indian villager is more likely to invest in longer-term strategies if the

harvest has been good. If it has been poor, he will focus on how to get calories for his family tomorrow, not on strategies for future prosperity. A single mother may respond to the admonition to read bedtime stories to her children – it's good for their long-term future – that she would if she could be sure that they would have a bed, let alone a book.

So it is with healthy choices. Under different circumstances, people with lower income would be more likely to adopt the choices that are good for health. Having time to think about exercise is a luxury that people at the economic margins may not have, quite apart from a lack of amenities; healthy food may be beyond a household budget. The stress of marginal employment would be happily forgone if better jobs were available.

Globally, to take effective action on NCDs, we need to address inequalities in NCDs, and this entails action on the social determinants of health. This chapter focuses on what we can do, but first we look at cancer in the context of inequalities in health.

### Health inequalities: the gradient

All countries from which we have good data show inequalities in mortality. Such inequalities are not confined to poor health for the poor, but follow a social gradient (Marmot, 2015). In low-income countries, where the systematic collection of data on inequalities is uncommon, we have data on child mortality from Demographic and Health Surveys (Gwatkin, 2007). In country after country, the lower the wealth quintile, the higher the mortality rate of children under the age of 5 years.

Specific analyses from middle-income countries such as Brazil show

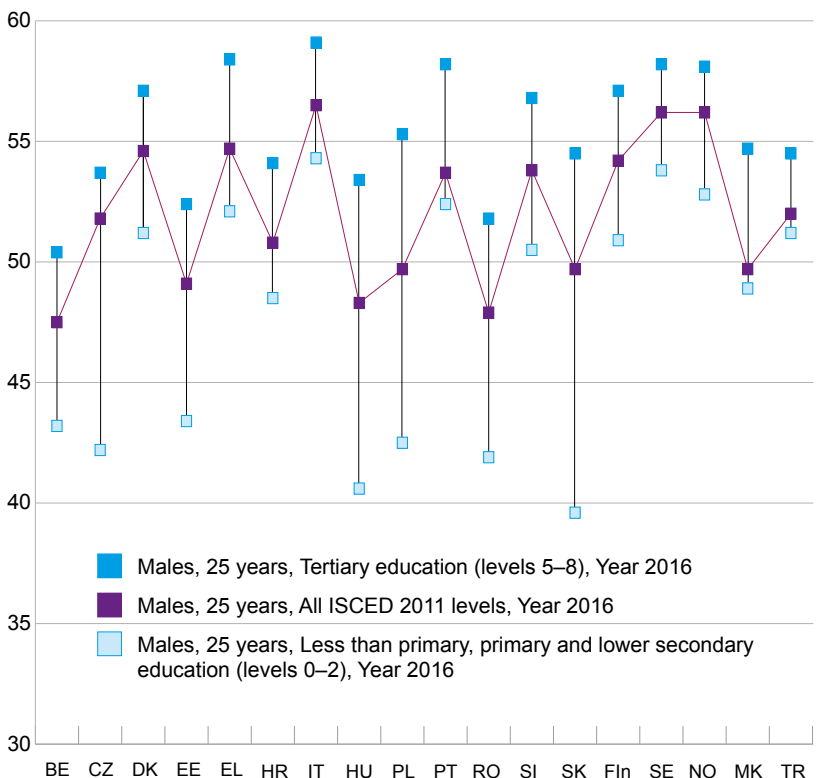
social gradients in adult mortality (Bassanesi et al., 2008). In high-income countries, the gradient is clear: higher socioeconomic position means lower mortality, whether socioeconomic position is measured by education level, income, occupational status, or degree of deprivation of area of residence. A recent publication from Lifepath, a European collaborative research programme, showed that in 48 cohorts low occupational status was associated with higher all-cause mortality (Stringhini et al., 2017).

If all societies have social and economic inequalities – in education level, income, occupational status, and living conditions – and the social gradient in health follows from

these social and economic inequalities, one might speculate that there will always be inequalities in health. Probably, there will be. However, the magnitude varies between countries and, over time, within countries. If the magnitude of inequalities, that is, the slope of the gradient, is not fixed, it suggests that action to reduce these inequalities should be possible.

First, consider the variation in health inequalities between countries: it is marked. In Europe, we calculated life expectancy at the age of 25 years by education level. In each country, men with a university education had a longer life expectancy than men with only a primary education (Fig. 2.1), but the gap varied (Marmot and UCL Institute of Health Equity,

**Fig. 2.1.** Life expectancy for men aged 25 years, by education level, in different European countries. ISCED, International Standard Classification of Education; levels 0–2, pre-primary, primary, and lower secondary education, or second stage of basic education; levels 5–8, first stage of tertiary and second stage of tertiary education. Source: Eurostat [demo\_mlexpedu] (2016).

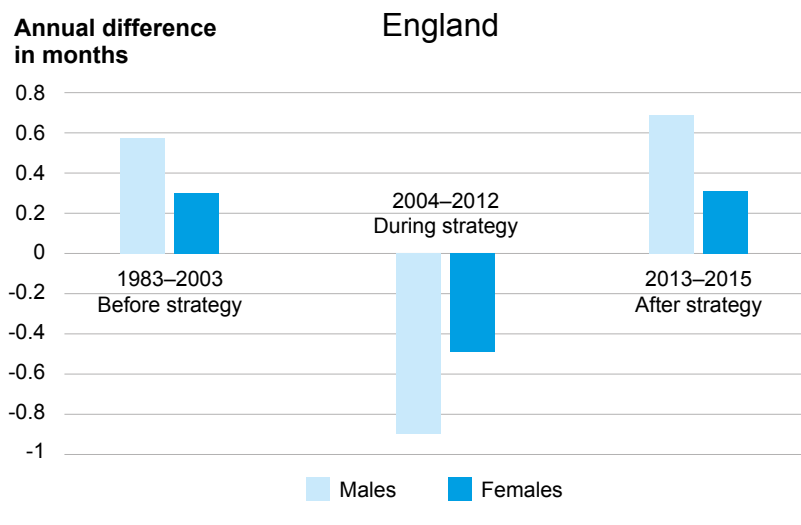


2013). Sweden has the second longest life expectancy at the age of 25 years, and a narrow gap between those with a primary education and those with a tertiary education. Men living in the countries located to the east of Sweden have a lower average life expectancy, and there is a wider gap in life expectancy between those with a primary education and those with a tertiary education. Looking at it a different way, the health disadvantage of living in these countries is greater for those with a primary education than for those with a tertiary education. They do know how to get good health in Bulgaria, Estonia, Hungary, and Romania ... it happens for men with university education. It is those lower in the hierarchy who suffer most.

The magnitude of health inequalities also varies within countries over time. Part of that variation may result from conscious policy decisions. In England, Barr et al. (2017) looked at the gap in life expectancy between the poorest 20% of local authorities and the remainder; their results are summarized in Fig. 2.2. The New Labour government, elected in 1997, developed a national strategy to reduce health inequalities. In the period before the strategy was put in place, the health gap between the poorest 20% and the remainder was widening. During the period of the strategy, the gap narrowed. In the period after the strategy, when a Conservative-led coalition government changed policy direction, health inequalities increased again.

This simple correlation in time does not prove causation, nor does it tell us what feature, if any, of government policy might have made the most difference. What the data do show is that the magnitude of health inequalities can vary quite quickly.

**Fig. 2.2.** Trends in difference in life expectancy between areas of greatest deprivation and the average. Source: compiled from Barr et al. (2017).



The data are, at the least, consistent with the notion that having an explicit policy to do something about the problem may help.

### Cancer and health inequalities

Cancer has perhaps featured less than some other diseases in the consideration of health inequalities. This volume is a timely reminder that that should no longer be the case, as illustrated by Fig. 2.3. Although the contribution of cancer to absolute inequalities in all-cause mortality varies among countries, it is substantial in each case. Unexpectedly, cancer looms large in middle-income countries. It is, however, more difficult to obtain data on social inequalities. There are exceptions, such as the demonstration of inequalities by education level in Colombia, particularly for cancers of the stomach and cervix, both of which are linked to infection (de Vries et al., 2015).

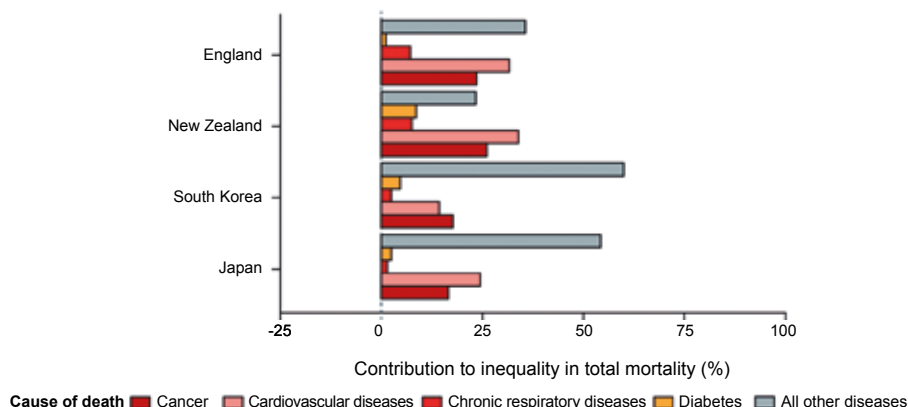
### Cancer inequalities: the causes

Cancer Research UK (Gordon-Dseagu, 2006) concluded that 40%

of cancers in the United Kingdom are preventable, and that globally the estimate is similar (30–50%). According to Cancer Research UK, the routes to lower cancer risk are, in order of importance, to be a non-smoker, maintain a healthy weight, eat fruits and vegetables, consume less alcohol, be “SunSmart”, eat less processed meat and red meat, eat a high-fibre diet, be physically active, and eat less meat.

Each of these is socially determined, and many show a social gradient; more unhealthy behaviours are observed in those lower in the hierarchy. It used to be thought that in low- and middle-income countries cigarette smoking was more common in groups with higher income or higher education level, unlike the gradient seen in high-income countries. This is no longer the case. In many lower- and upper-middle-income countries, smoking is more common lower in the hierarchy (Global Tobacco Economics Consortium, 2018). Similarly with obesity, the social gradient is clear in North America and Europe, as illustrated in Fig. 2.4

**Fig. 2.3.** Contribution of selected noncommunicable diseases to absolute inequality (all-cause) death rates between lowest and highest quintiles of community socioeconomic status for those aged 30–64 years. Source: reprinted from Di Cesare et al. (2013), copyright 2013, with permission from Elsevier.



for 19 Member States of the European Union.

Worryingly, in Britain there is a social gradient in childhood obesity, which has been steepening over time (NHS Digital, 2017). Given that childhood obesity tracks into adulthood, we are facing increasing inequalities in obesity in the future.

I have placed emphasis on socioeconomic differences in health and disease. In the Commission on Equity and Health Inequalities in the Americas, established by the Pan American Health Organization, we are also concerned with ethnic and gender inequalities. We see that throughout the Americas, Indigenous groups are disadvantaged in terms of social determinants of health compared with non-Indigenous groups. In many countries of the Americas, including the USA, people of African descent are commonly subject to structural racism, which compounds socioeconomic disadvantage. These socioeconomic and ethnic disadvantages can combine with differences between sexes in social determinants of health.

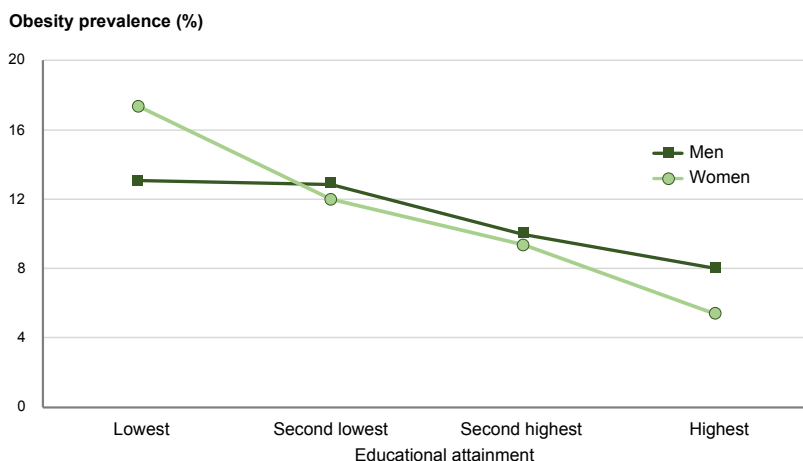
### Cancer inequalities: what can be done?

It can be argued that the mind is an important gateway by which social determinants affect health equity. The above-mentioned risks identified by Cancer Research UK are behavioural, that is, controlled by the mind. As I stated at the beginning of this chapter, however, it is inadequate to see these behaviours as simply being under the control of in-

dividuals without taking into account the social determinants that lead to inequalities in these behaviours.

A review of health inequalities in England, *Fair society, healthy lives: the Marmot review* (Marmot, 2010), identified six domains of recommendations to reduce avoidable health inequalities and promote health equity: (i) giving every child the best start in life; (ii) education and lifelong learning; (iii) employment and working conditions; (iv) a

**Fig. 2.4.** Obesity prevalence according to educational attainment, averaged over 19 European Union Member States. Source: reproduced from report by Robertson et al. (2007).



minimum income for healthy living (everyone should have at least the minimum income that would enable them to live a healthy life); (v) healthy and sustainable places and environments in which to live and work; and (vi) taking a social determinants approach to prevention, that is, not just looking at reducing smoking and unhealthy diet, for example, but also looking at the causes of the social distribution of these behaviours (the causes of the causes). To prevent inequalities in cancer, attention must be paid to these six domains through the entire life-course. In other words, promotion of health equity with respect to cancer should be part of a general approach to reducing health inequalities.

The argument I have just stated is not confined to cancer. In recent months, I have been invited to talk about social determinants and health equity to groups concerned with medical education, internal medicine, cardiology, surgery, paediatrics, thoracic medicine, mental illness, obstetrics and gynaecology, cancer control, primary care, pharmacy, early child development, violence, inclusion health, health psychology, psychosomatic medicine, vegetable summit, and concepts of honour, as well as public health and health promotion, urban renewal, local government, and community development.

The causes of cancer identified by Cancer Research UK are largely behavioural, but interventions to address these causes will also have

an environmental component; examples are banning smoking in public places and encouraging active transport. Environmental, rather than simply behavioural, interventions will also be important in relation to other medical conditions: reducing air pollution, improving housing quality, and designing neighbourhoods to promote health and well-being.

We need to make common cause, not only to reduce inequalities in cancer and specific medical conditions but also to promote health equity more generally. A commitment to action on social determinants of health is urgently required.

## Key points

- About 40% of cancers are judged to be preventable by simple lifestyle changes; these causes of cancer, smoking and obesity principal among them, are socially determined.
- These causes follow a social gradient, with lower socioeconomic position corresponding to higher risk. They contribute to inequalities in the occurrence of cancer.
- To make progress in reducing inequalities in cancer we must address the causes of the causes of cancer.
- Evidence shows that inequalities in mortality vary between and within countries. The implication is that inequalities are not fixed but can be improved.

# References

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- Barr B, Higgerson J, Whitehead M (2017). Investigating the impact of the English health inequalities strategy: time trend analysis. *BMJ*. 358:j3310. <https://doi.org/10.1136/bmj.j3310> PMID:28747304
- Bassanesi SL, Azambuja MI, Achutti A (2008). Premature mortality due to cardiovascular disease and social inequalities in Porto Alegre: from evidence to action. *Arq Bras Cardiol*. 90(6):370–9. PMID:18592089
- de Vries E, Arroyave I, Pardo C, Wiesner C, Murillo R, Forman D, et al. (2015). Trends in inequalities in premature cancer mortality by educational level in Colombia, 1998-2007. *J Epidemiol Community Health*. 69(5):408–15. <https://doi.org/10.1136/jech-2014-204650> PMID:25492898
- Di Cesare M, Khang YH, Asaria P, Blakely T, Cowan MJ, Farzadfar F, et al.; Lancet NCD Action Group (2013). Inequalities in non-communicable diseases and effective responses. *Lancet*. 381(9866):585–97. [https://doi.org/10.1016/S0140-6736\(12\)61851-0](https://doi.org/10.1016/S0140-6736(12)61851-0) PMID:23410608
- EC (2013). Health inequalities in the EU – Final report of a consortium. Consortium lead: Sir Michael Marmot. European Commission. Available from: [https://ec.europa.eu/health/sites/health/files/social\\_determinants/docs/healthinequalitiesineu\\_2013\\_en.pdf](https://ec.europa.eu/health/sites/health/files/social_determinants/docs/healthinequalitiesineu_2013_en.pdf).
- Global Tobacco Economics Consortium (2018). The health, poverty, and financial consequences of a cigarette price increase among 500 million male smokers in 13 middle income countries: compartmental model study. *BMJ*. 361:k1162. <https://doi.org/10.1136/bmj.k1162> PMID:29643096
- Gordon-Dseagu V (2006). Cancer and health inequalities: an introduction to current evidence. Cancer Research UK. Available from: [http://www.cancerresearchuk.org/prod\\_consump/groups/cr\\_common/@nre/@pol/documents/generalcontent/crukmg\\_1000ast-3344.pdf](http://www.cancerresearchuk.org/prod_consump/groups/cr_common/@nre/@pol/documents/generalcontent/crukmg_1000ast-3344.pdf).
- Gwatkin DR (2007). Socio-economic differences in health, nutrition and population within developing countries: an overview. Washington (DC), USA: World Bank.
- Marmot M (2010). Fair society, healthy lives: the Marmot review. Strategic review of health inequalities in England post-2010. London, UK. Available from: <http://www.instituteofhealthequity.org/resources-reports/fair-society-healthy-lives-the-marmot-review/fair-society-healthy-lives-full-report-pdf.pdf>.
- Marmot M; UCL Institute of Health Equity (2013). Review of social determinants and the health divide in the WHO European Region. Copenhagen, Denmark: World Health Organization Regional Office for Europe. Available from: <http://www.euro.who.int/en/publications/abstracts/review-of-social-determinants-and-the-health-divide-in-the-who-european-region-final-report>.
- Marmot M (2015). The health gap. London, UK: Bloomsbury.
- NHS Digital (2017). National child measurement programme – England, 2016-17. National Health Service. Available from: <https://digital.nhs.uk/data-and-information/publications/statistical/national-child-measurement-programme/2016-17-school-year>.
- Robertson A, Lobstein T, Knai C (2007). Obesity and socio-economic groups in Europe: evidence review and implications for action. Available from: [http://ec.europa.eu/health/ph\\_determinants/life\\_style/nutrition/documents/ev20081028\\_rep\\_en.pdf](http://ec.europa.eu/health/ph_determinants/life_style/nutrition/documents/ev20081028_rep_en.pdf).
- Stringhini S, Carmeli C, Jokela M, Avendaño M, Muennig P, Guida F, et al.; LIFEPAH consortium (2017). Socioeconomic status and the 25 × 25 risk factors as determinants of premature mortality: a multicohort study and meta-analysis of 1.7 million men and women. *Lancet*. 389(10075):1229–37. [https://doi.org/10.1016/S0140-6736\(16\)32380-7](https://doi.org/10.1016/S0140-6736(16)32380-7) PMID:28159391