

# IDENTIFYING UNDERLYING CAUSES OF HEALTH INEQUALITY TO INFORM POLICY

Barbara Eberth, Anne Ludbrook, and Rodolfo Hernández with Ulf-G Gerdtham from Lund University

## What problem was this research addressing?

The existence of socioeconomic inequalities in health and in health behaviours (smoking, alcohol intake, physical inactivity and unhealthy diet) is well-documented and these inequalities have persisted despite attempts to address them over the years<sup>1,2</sup>. There is a large literature on the socioeconomic factors associated with health inequalities but less attention has been given to the relative contribution of the different factors or to the importance of the mechanisms through which socioeconomic factors such as income and education impact on health. In particular, there has been little attention given to the role of health behaviours and socioeconomic inequalities in health behaviours. Individual health behaviours and health inequalities have been considered in epidemiological studies but these tend to focus on single health behaviours, for example, smoking<sup>3</sup>. Whilst there is a lack of evidence regarding effective initiatives to reduce health inequalities by tackling the underlying inequalities in socioeconomic factors<sup>4</sup>, there is also a lack of understanding of the mechanisms that generate health inequalities.

## What does this research aim to add?

This briefing paper reports on a Chief Scientist Office (CSO) funded study that examined the underlying causes of income related inequalities (IRI) in health behaviours and in measures of general health. The project aimed to understand how and to what extent health behaviours and socio-economic inequalities in health behaviours are a mediating factor in health inequalities. Further details can be found in the study report<sup>5</sup>.

## Methods

The project took a different approach to measuring health inequalities by including the concentration index (C), as well as other standard measures of health inequality; the range (best-worst) and gradient across the income distribution in absolute and relative terms. C measures the extent of inequality in health or a health behaviour that is systematically associated with socioeconomic status, typically measured by income. A value of zero implies an equal distribution of health across income. Positive (negative) values are interpreted as favouring the rich (poor). An advantage of the C measure is that it can be decomposed in order to estimate the contribution to health inequality of each health

determinant in terms of (i) the impact that the determinant has on health (elasticity) and (ii) the unequal distribution of the determinant across income (C). IRIs can be reduced either by addressing the impact of determinants on health or by reducing inequalities in the determinants, or both.

The study used data on individuals aged 18-64 from the 2003 and combined 2008/2009 Scottish Health Surveys and the 2003 and 2008 Health Survey for England. The main socioeconomic status measure in the inequality analysis was self-reported household income, adjusted for household size and composition. Several general health measures were used in order to judge the sensitivity of inequality to the choice of health measure: GHQ12, a measure of mental distress and psychological ill-health; EQ-5D, a standardised non-specific self-administered disease instrument for valuing health related quality of life; self-reported very good and very good and good general health. The health behaviours analysed were smoking, obesity, fruit and vegetable consumption, average weekly hours of sports participation, average units of alcohol consumed on the heaviest drinking day in a week and average units of alcohol consumed per week. The latter measure was only available in the Scottish Health Survey.

## Key findings

- Significant income related health and health behaviour inequalities exist in Scotland favouring those on highest incomes.
- For general health measures, significant relative improvements over time were found only for self reported very good and good general health.
- No significant relative improvements were found for any health behaviours in Scotland.
- Absolute inequalities in health behaviours and very good and good general health reduced significantly.
- Scotland's relative health and health behaviour inequalities are worse compared to England.
- Inequalities and differences in inequalities between Scotland and England, and over time, are largely explained by income, economic inactivity status and education.

Of these three factors, education was shown to make the smallest contribution to IRIs in health. However, the contribution to health behaviour inequalities is larger. For example, having no educational qualification was found to contribute 9% (8.3%) to IRI in very good and good general health in Scotland (England) in 2003 and 6.5% (10.7%) in 2008/09 compared to contributions of 17.5% (18%) in 2003 and 15% (13%) in 2008/09 to IRI in smoking. Smoking also contributes to IRIs in health, and, on some health measures, makes a larger contribution than the direct effect of education. Whilst health behaviours as health determinants make small contributions to IRIs in general health, they were found to make larger contributions to IRIs in other health behaviours.

As reported above, Scotland only experienced a significant improvement in IRI in health measured by very good and good general health. The reduction in IRI in this health measure was mainly attributable to income and education. The aggregate contribution from employment status was negative (i.e. this factor was tending to make IRI in health worse); the negative effect came from unemployment but this was almost offset by positive contributions from retirement and inactivity status. Smoking and fruit and vegetable consumption also contributed negatively. Physical activity, however, contributed positively to the reduction in IRI in health.

In all cases, the impact of the health determinant on health was estimated as having a larger impact than the inequality in the determinant. For example, over the period 2003 to 2008/9, the IRI in having no education actually increased but this was more than offset by a reduction in the impact of having no education on self-reported very good and good general health. The negative effect of smoking came from both an increase in the IRI for smoking and an increase in the impact of smoking on health but the latter effect was larger.

### Policy relevance of the research findings

The relative scale of the impact of health determinants on health and health behaviours compared with the effect of inequalities in the health determinants suggests that, in the short term, reducing the impact of disadvantage on health and health behaviours has more effect on IRIs than changes in the underlying distribution of income, economic activity and education. This implies that health improvement interventions which reduce the impact of disadvantage on health have the potential to reduce IRIs in health more effectively, in the short term, than interventions which seek to reduce IRIs in education and economic circumstances, which would be longer term and implemented largely outwith the NHS.

Income and education have contributed most to the reduction in IRI in very good and good self-assessed health in Scotland between 2003 and 2008 but most of the effect comes from a reduction in the impact that having low income or no educational qualification has on health. Therefore, a strategy of targeting interventions to disadvantaged groups would be expected to reduce IRIs in short term outcomes, such as self-assessed health. This is consistent with current policies for anticipatory care, such as Keep Well. However, these interventions are often targeted by area based indicators of deprivation; more consideration could be given to both tailoring and targeting interventions to reach individuals.

With respect to health behaviours, such as smoking, there is potential to reduce health inequalities both by reducing smoking in low income groups and by improving health care for continuing smokers. The importance of smoking as a determinant of other health behaviours should not be overlooked.

Different measures of health inequality can provide complementary information for understanding and monitoring inequalities. The methods applied here are able to determine the significance of differences in inequality over time and can identify the relative importance of different determinants.

## Acknowledgements

The study 'Socioeconomic inequalities in health and behaviour: Application of novel approaches to identify health inequality in Scotland and England to inform policy', was funded by the Chief Scientist Office of the Scottish Government Health and Social Care Directorates (grant CZH/4/577).

## References

1. Scottish Executive (2003) Improving health in Scotland: the challenge, Edinburgh: Scottish Executive.
2. Scottish Government (2008) Equally well: report of the ministerial task force on health inequalities, Edinburgh: Scottish Government.
3. Gruer, L., Hart, C. L., Gordon, D. S. and Watt G. C. M. (2009) Effect of tobacco smoking on survival of men and women by social position: a 28 year cohort study, *British Medical Journal*, 338: b480, doi:10.1136/bmj.b480.
4. Strategic Review of Health Inequalities in England post-2010 (2010) Fair society, healthy lives: the Marmot review, London: Marmot Review.
5. Eberth, B., Ludbrook, A., Hernández, R. and Gertham, U-G. (2014) Socioeconomic inequalities in health and behaviour: application of novel approaches to identify health inequalities in Scotland and England to inform policy. Final report, Edinburgh: Chief Scientist Office.

### CONTACT US

#### HEALTH ECONOMICS RESEARCH UNIT

Institute of Applied Health Sciences, Polwarth Building, Foresterhill, Aberdeen AB25 2ZD

Tel: +44 (0)1224 437197/437196 Fax: +44 (0)1224 437195 Email: [heru@abdn.ac.uk](mailto:heru@abdn.ac.uk) [www.abdn.ac.uk/heru](http://www.abdn.ac.uk/heru)