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Review

Income inequality and health: A causal review

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ABSTRACT

There is a very large literature examining income inequality in relation to health. Early reviews came to different interpretations of the evidence, though a large majority of studies reported that health tended to be worse in more unequal societies. More recent studies, not included in those reviews, provide substantial new evidence. Our purpose in this paper is to assess whether or not wider income differences play a causal role leading to worse health. We conducted a literature review within an epidemiological causal framework and inferred the likelihood of a causal relationship between income inequality and health (including violence) by considering the evidence as a whole. The body of evidence strongly suggests that income inequality affects population health and wellbeing. The major causal criteria of temporality, biological plausibility, consistency and lack of alternative explanations are well supported. Of the small minority of studies which find no association, most can be explained by income inequality being measured at an inappropriate scale, the inclusion of mediating variables as controls, the use of subjective rather than objective measures of health, or follow up periods which are too short.

The evidence that large income differences have damaging health and social consequences is strong and in most countries inequality is increasing. Narrowing the gap will improve the health and wellbeing of populations.

Key points

- Evidence that income inequality is associated with worse health is reviewed.
- It meets established epidemiological and other scientific criteria for causality.
- The causal processes may extend to violence and other problems with social gradients.
- Reducing income inequality will improve population health and wellbeing.

1. Introduction

World leaders, including the US President, the UK Prime Minister, the Pope and leaders at the International Monetary Fund, the United Nations, World Bank and the World Economic Forum have all described income inequality as one of the most important problems of our time and several have emphasized its social costs (Cameron, 2009; Elliott, 2014; Lagarde, 2013; Moon, 2013; Obama, 2014; Pope Francis, 2013; World Economic Forum, 2014). Inequality is increasing in most regions of the world, rapidly in most rich countries over the past three decades (OECD, 2011; Ortiz and Cummins, 2011). There is a very large literature examining income inequality in relation to health. Early reviews came to different interpretations of the evidence, though a majority of studies reported that health tended to be worse in more unequal societies (Lynch et al., 2004; Macinko et al., 2003; Subramanian and Kawachi, 2004; Wagstaff and van Doorslaer, 2000; Wilkinson and Pickett, 2006). More recent studies, not included in those reviews, provide substantial new evidence.

There is also growing evidence that a wide range of social outcomes, associated with disadvantage within societies, are more common in societies with bigger income differences between rich and poor. Although our objective in this paper is to assess whether or not wider income differences play a causal role leading to worse health (including the public health issue of violence), we consider studies of other social outcomes where they affect interpretation of the health data.

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The first task is to clarify the causal hypothesis, and how it has developed as research has progressed. Research was initially focused simply on whether health was worse in more unequal societies, but there is now growing evidence to suggest that this should be seen as part of a wider tendency for a broad range of outcomes with negative social gradients (i.e. more prevalent where social status is lower) to be more common in societies with bigger income differences between rich and poor. Rather than this pattern being confined to physical health, it may apply also to mental health, and public health issues such as violence, teenage births, child wellbeing, obesity, and more.

Whether causality is tested in relation to a hypothesis confined to a relationship between inequality and physical health, or whether the hypothesis extends to problems with social gradients more generally, has important implications for understanding possible causal mechanisms, mediators and confounders.

In this paper, we will focus on the strongest and most important claim underpinning an effect of inequality on health: that large income differences between rich and poor lead to an increasing frequency of most of the problems associated with low social status within societies. Fig. 1 provides an illustration of the relationships with which this paper is concerned. It shows a cross sectional association between income inequality in developed countries and an index which combines data on: life expectancy, mental illness, obesity, infant mortality, teenage births, homicides, imprisonment, educational attainment, distrust and social mobility. (Raw scores for each variable were converted to z-scores and each country given its average z-score (Wilkinson and Pickett, 2009).)

2. History

The hypothesis that problems (including poor health) associated with low social status are more common in more unequal societies can be traced back to independent roots in papers on homicide rates and on mortality rates. The research literature on homicide and inequality goes back at least 40 years, to a demonstration that they were positively associated among states in the USA (Loftin and Hill, 1974). The earliest paper on mortality and income inequality – some 35 years ago – showed a cross-sectional association between Gini coefficients of income inequality and both infant mortality and life expectancy at age 5, among a group of 56 developed and developing countries (Rodgers, 1979). By 1993, a meta-analysis of some 34 studies concluded that there was a robust tendency for violence to be more common where income differences were larger (Hsieh and Pugh, 1993). The research on income inequality and health expanded rapidly after the first papers were published in journals of epidemiology and public health (Wilkinson, 1992a,b). By 2006, a review of papers on income inequality and health identified 168 analyses, the overwhelming majority of which showed a positive association (Wilkinson and Pickett, 2006). The two literatures – in criminology and sociology on the one hand, and epidemiology and public health on the other – developed independently and unaware of each other until the late 1990s (Wilkinson et al., 1998; Wilson and Daly, 1997).

It was only in 2005 and 2006 (Pickett et al., 2006, 2005a,b), as researchers began to show that the correlates of inequality included teenage birth rates, obesity and mental illness, that it started to look as if a more general explanatory hypothesis was needed than those which had addressed only physical health and violence. On the assumption that social gradients were often evidence that an outcome was sensitive to social status differentiation, we formed the hypothesis that greater inequality might act to strengthen the effects of socioeconomic status differentiation among outcomes with social gradients.

We tested this hypothesis by analyzing whether or not outcomes with steeper social gradients had stronger associations with societal inequality. We selected ten different death rates, some with weaker and some with stronger social gradients, as measured by their correlation with county median income, among the 3139 counties of the USA (Wilkinson and Pickett, 2008). In a multilevel model controlling for the effects of county income, we then estimated the correlations of these death rates with state income inequality. The results, shown in Fig. 2, provided strong confirmation of the hypothesis.

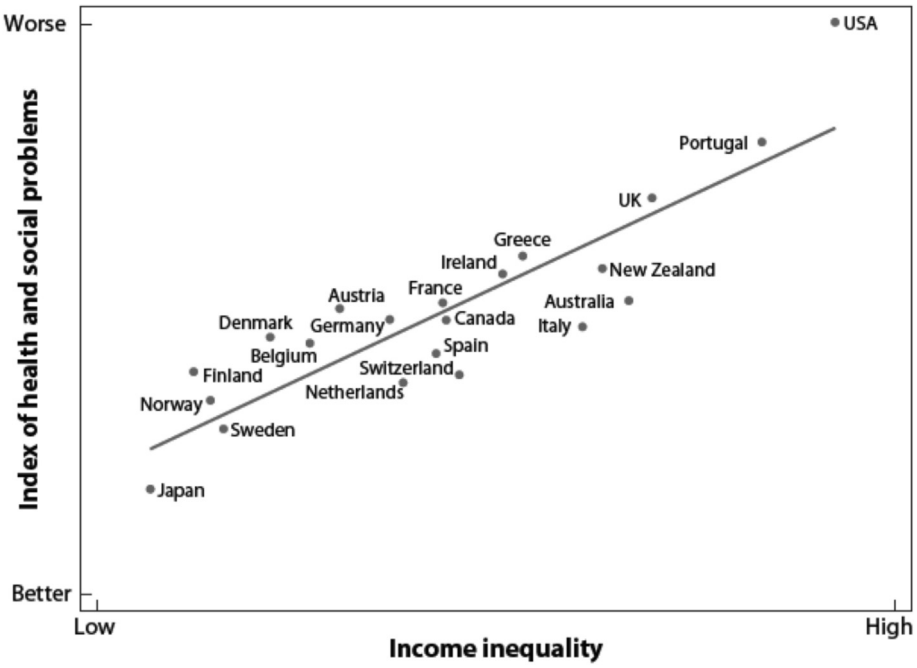

Fig. 1. Index of health and social problems in relation to income inequality in rich countries. Income inequality is measured by the ratio of incomes among the richest compared with the poorest 20% in each country. The index combines data on: life expectancy, mental illness, obesity, infant mortality, teenage births, homicides, imprisonment, educational attainment, distrust and social mobility. Raw scores for each variable were converted to z-scores and each country given its average z-score (Wilkinson and Pickett, 2009).