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## Advancing the income inequality – health hypothesis

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The notion that income inequality exerts an influence on health status (over and above the long-known effects of individual or household income) has received a great deal of attention in social epidemiology, medical sociology and economics in the past 20 years. And although a clear consensus on the hypothesis is yet to emerge, a new wave of empirical studies has strengthened the case for seeing income inequality as a social determinant of health. This article examines the current trajectory of the income inequality – health literature, and explores two issues that will be critical to its development in the coming years: (1) the need to re-examine the epistemological grounding of this research area, with a corresponding shift towards blurring the division between positivism and critical realism, and (2) the value of re-considering the geo-political ‘frame’ of studies in this field, with a move towards a truly global analysis of the health effects of income inequality.

**Keywords:** income inequality; population health; epistemology; methodology

### Introduction

In the past 20 years, analysis of the pathogenic effects of income inequality has developed into an important area of research in social epidemiology, medical sociology and economics. The idea that our health depends not only on our own income but also on how income is distributed in the place in which we live has generated intense debates – with disagreements often yielding productive exchanges on methodological, theoretical and epistemological issues (Muntaner and Lynch 1999, Subramanian and Kawachi 2003, Coburn 2004, De Maio 2010). However, many central issues remain contested, and a consensus on the hypothesis is far from clear.

More than 200 statistical studies have examined the relationship between income inequality and population health, and approximately 90% of these have found at least some support for the hypothesized relationship. However, once control variables are taken into account, this figure drops to approximately 40% (Wilkinson and Pickett 2009a), with little agreement in the literature surrounding the distinction between confounders and mediators, the geographical level in which the hypothesis should be tested, the regions in the world where the hypothesis might apply (Lynch *et al.* 2003, 2004, Subramanian and Kawachi 2003), and which health

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indicators should be used (De Maio 2007a, 2008). Despite a large and growing body of research, agreement on the validity of the hypothesis, the mechanisms that underlie it and the global forces that shape it has not been reached (Deaton 2002, Starfield and Birn 2007, Subramanian and Kawachi 2007, De Vogli *et al.* 2009, Bernburg 2010).

The bulk of literature suggests that income inequality is associated with poor health outcomes, at least in the United States (Ross *et al.* 2000, Backlund *et al.* 2007, Wilkinson and Pickett 2009b), with some contested exceptions (Deaton and Lubotsky 2003, Muntaner 2003, Subramanian and Kawachi 2007). The extent to which this model applies in within-country analyses in other parts of the world, including the relatively more equal countries of Scandinavia (Böckerman *et al.* 2009) and Central and Eastern Europe (Bobak *et al.* 2007) has been called into question. As well, non-significant findings have been published using data from other relatively equal countries, including Germany (Breckenkamp *et al.* 2007), Denmark (Osler *et al.* 2002, 2003), Canada (Veenstra 2002, Auger *et al.* 2009) and Japan (Shibuya *et al.* 2002). At the same time, new research has raised questions about this pattern by showing that income inequality may indeed be associated with an increased risk of mortality but only for Canadian-born residents and not for immigrants (Auger *et al.* 2011).

Leading credence to the idea of a ‘threshold’ effect, wherein income inequality has a detectable effect on health but only at or above a certain level of inequality, significant effects have been detected in the relatively unequal countries of China (Pei and Rodriguez 2006), Italy (De Vogli *et al.* 2005), Brazil (Cavalini and de Leon 2008) and Chile (Subramanian *et al.* 2003), as well as in Argentina, using life expectancy (De Maio 2008). At the same time, recent multi-country analyses (Pickett *et al.* 2005, Moore 2006, Dorling *et al.* 2007, Pickett and Wilkinson 2007) have generated renewed support for the hypothesis, although this has been disputed in work using self-rated health measures (Jen *et al.* 2009). The net result of the empirical work in this area is deeply nuanced.

The literature on the income inequality hypothesis is impressively interdisciplinary, drawing from biomedical research on stress pathways (Brunner 1997, Wilkinson 2000b) to sociological work on social capital (Moore *et al.* 2006, Poortinga 2006, Mansyur *et al.* 2008), economic research on the measurement of inequality (De Maio 2007b), philosophical discussion of inequality versus inequity (Daniels *et al.* 2000, Asada 2007) as well as debates on class (Muntaner and Lynch 1999). The field has shown an active engagement with social theory – drawing at times from Durkheim (Turner 2003) as well as Marx, Bourdieu, Veblen and others (De Maio 2010). Throughout this literature, a dominance of quantitative methods is clear. What is less clear, however, is the epistemological basis of this research area – with contributions from positivist and critical realist positions (De Maio 2010). Related to this, the geo-political ‘frame’ of this area of study needs to be re-considered (Labonte and Torgerson 2005), with calls for a global perspective on the income inequality hypothesis increasingly being raised (Farmer 1999, 2003).

### **Epistemological tensions**

The core of the literature has been described by both friendly (Coburn 2000, Muntaner 2003) and hostile critics (Wainwright and Forbes 2000, Scambler 2001) as

positivist, as it relies almost exclusively on statistical analysis of secondary data and looks to build a general theory from repeated observations of correlations between exposure (inequality) and effect (poor health). Most studies in this area have utilized some form of regression analysis. Some of the most intense debates in this field have been over measurement issues – the use of morbidity or mortality indicators, the geographical level at which to study the hypothesis, the operationalization of income distribution and the appropriateness of ecological versus multilevel statistical approaches. All these are indicative of an epistemological approach that is guided by the idea that to ‘measure is to know’. Whilst never fully succumbing to the abstracted empiricism forcefully criticized by Mills (1959) in the *Sociological Imagination*, most of the studies in this area have largely ignored ‘generative mechanisms’ (Scambler 2001) that are reflective of political economy. Income inequality has tended to be the starting point of the analysis, and the political/social determinants of that inequality have been ignored.

This has been perhaps the most important weakness of the scholarship on the income inequality – health hypothesis. A great deal of attention has been given to pathways that may link inequality to poor health, with insights drawing on psychosocial, social cohesion and neo-materialist traditions (De Maio 2010). Relatively few studies have focused on the mechanisms underlying patterns of income inequality, with the result being that a political economy of the health effects of income inequality is at best only preliminarily sketched out in the literature.

Instead, critical realist scholars have called for an alternative approach, one that investigates the causes and not just the effects of income inequality. For Coburn, this represents ‘a broader, more contextualized and more sociologically meaningful causal model’ (2000, 2004, p. 43). Coburn argues:

... numerous researchers have explored methods of ameliorating the effects of poor social conditions on the health of the underprivileged... [but] hardly any have asked about the possible causes of inequality itself. Yet, examining the causes of social inequalities, and not simply their effects, changes our understanding of the causal sequences involved in the income inequality/health status relationship (2001, p. 50).

From this perspective, the health effects of income inequality are important but should be examined through the wider lens of political economy rather than epidemiology. Wilkinson has argued that the hypothesis indeed takes into account the underlying political context (Wilkinson 2000a). Wilkinson has also attempted to respond to criticisms of his reliance on income inequality and his neglect of class models (Muntaner and Lynch 1999, Muntaner 2003). However, despite those debates, empirical work – and particularly the analyses published by Wilkinson and Pickett (2006, 2009a, 2009b) in recent years – has continued to begin the causal sequence with a measure of income inequality. Coburn’s vision of a statistical analysis of the health effects of income inequality that is fully engaged with neo-liberalism, global political economy and international actors such as the International Monetary Fund and the World Bank remains unfulfilled. Pursuing this line of investigation would require a tremendous range of scholarship and considerable flexibility in terms of methodology – a flexibility that is rarely found in a medical sociology that has for some time been divided along epistemological and methodological grounds (Mechanic 1989).

This area of research is therefore perhaps uniquely positioned to blur the epistemological boundary between positivism, where to measure is to know, and

critical realism, where knowledge is not readily measured, but must be theorized. This does not entail a disavowal of the statistical approaches that have been central to the field thus far; after all, critical realist scholars have emphasized that ‘realists run regressions’ (Porpora 2001, Olsen and Morgan 2005). However, it does entail a significant expansion of what we might call the ‘explanatory sphere’.

A critical realist take on the health effects of income inequality may also be central to integrating this area of work with ongoing research on the health effects of racism, sexism and other forms of discrimination. The key to doing that will be to conceptualize – and integrate into statistical modelling – concepts like class, inequality and discrimination not merely as attributes of individuals, but as social relations (Muntaner 2003). One implication of this new approach is that analyses of the income inequality – health relationship will likely have a more global perspective than they currently do; they will no longer be bounded by the nation-state as much of this literature has been, as a focus on generative mechanisms behind income inequality must surely grapple with international political economy (Farmer 1999, 2003). New studies in this area are beginning to take notions of welfare regimes seriously, and this may be one way of introducing social and political forces that influence patterns of income inequality.

### **A global perspective**

The majority of studies in this area have utilized individual-level data (Lynch *et al.* 2004, Wilkinson and Pickett 2006). That has important statistical advantages, including the avoidance of the ecological fallacy. However, a result has been that most studies have also been bounded by nation-state boundaries – with relatively few projects harmonizing individual-level data across countries. This is an important limitation; while our studies are bounded by political boundaries, both financial capital and disease are not. The starting point in critical realist accounts of the health effects of income inequality (in this area, almost certainly an account of financial capital, trade flows and economic integration with the global capitalist economy) and the ‘outcome’ (patterns of disease) are ontologically positioned outside the empirical frame of studies using national datasets. The result is that the ‘historically deep and geographically broad’ type of analysis that has been called for by scholars like Farmer (2003) remains difficult to carry out.

However, there are certainly promising signs in this area. Moore’s (2006) analysis of global patterns in life expectancy is indicative of the importance of a global approach informed by political economy. His analysis suggests that global trade patterns and world-system role (peripheral or non-peripheral) are critical dimensions of the health effects of income inequality. His analysis of 107 countries compared four typologies: (1) high/low income, (2) OECD membership/non-membership, (3) core/non-core (based on a country’s level of exchange in capital-intensive commodities) and (4) non-periphery/periphery (based on world systems theory). Using a regression analysis with an interaction effect between inequality and global position, Moore demonstrates that inequality actually has a stronger negative effect on life expectancies in peripheral populations, rather than non-periphery countries, as had been argued by Wilkinson. Most recently, Biggs *et al.* (2010) have demonstrated that income distribution plays a significant effect on the relationships between GDP per capita and population health among the countries of Latin America. These findings,

combined with previously published multilevel and ecological analyses illustrating a health effect of income inequality in Brazil (Cavalini and de Leon 2008), Argentina (De Maio 2008), Chile (Subramanian *et al.* 2003) and South Africa (Harling *et al.* 2008), along with an increasing appreciation of the burden of chronic non-communicable diseases in countries of the global south (World Health Organization 2005, Banatvala and Donaldson 2007, Horton 2007, Nabel *et al.* 2009), indicates that the traditional focus of the income inequality – health literature on the advanced industrialized countries of the world has been overly limited. Indeed, with statistical indication that income inequality is associated with life expectancy in the global south and with an understanding that the diseases linked to allostatic load (chronic diseases such as heart disease and diabetes) are the leading causes of death in these countries, a shift towards a truly global analysis of the health effects of income inequality is needed.

## Conclusion

Investigations of income inequality as a social determinant of health will in all likelihood continue to be an important aspect of critical public health, social epidemiology, economics and medial sociology in the coming years. Along with more studies of individual-level datasets using regression analysis (the standard approach in this area), work in this area has the potential to contribute to a truly social understanding of the drivers of population health. This may be achieved by explicitly exploring the epistemological grounding of our work – and with a corresponding shift towards blurring the division between positivism and critical realism. At the same time, work in this area is well positioned to move towards a more global frame of analysis – the end result may well be a historically deep and geographically broad analysis of a critical social determinant of health.

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