

Income Inequality and health: evidence from developed and developing countries.

### Major points

1. This study (MS1320) finds that income inequality in the developed world is associated with worse health, but in developing countries with better health. The finding on the developed countries appears to overthrow a great many more studies of health and income inequality than its authors seem to be aware of. Many of their references are out of date, and there seem to be a bias towards referencing the minority of studies which are hostile to the view that income inequality is damaging to health. All the reviews, including those by authors who were once sceptics, found that a large majority of studies supported the view that inequality is damaging to health among both developed and developing societies. The largest review, of 168 tests of the hypothesis is not referenced. (1) The overwhelming proportion of those studies showed significant effects of inequality on health. Contrary to the statement in the last paragraph of p.2, many of these studies include, or focus exclusively on, developing countries.
2. Similarly, the most methodologically sophisticated analysis, a meta-analysis of multilevel studies (which included individual data on almost 60 million individuals in nine cohort studies as well as close to 1.3 million in 19 cross-sectional studies) is mentioned only once (on p. 24-5) to provide erroneous support for the findings on the paper under review (MS1320). (2) Although the meta-analysis comes to the firm conclusion that income inequality does have a deleterious effect on health, it suggests that this may only apply where the gini coefficient of income inequality is over 30. While the main finding is not mentioned, the point about a threshold effect is referenced in support of MS1320's finding of a significant opposite effect, even though few countries in the study under review have Ginis as low as 30.
3. The upshot is that if the findings of MS1320 are to be taken seriously, its authors must take account of the weight of the evidence they are up against and try to explain why their findings are the opposite of a large majority of studies. There seem to be several possibilities here.
4. The first, and most important, is that they have used 'market incomes' from SWIID rather than disposable incomes. The difference is the effect of taxes, social security benefits, and state pensions. It is of course disposable incomes which determine living standards. Ginis for market incomes are almost always very much higher than those for disposable incomes. The authors do not say what definition of income they use, but the data in Table 1 (p.45) and in Figure A2 (p.29) which I checked suggest it is market income. If so this must invalidate the study. They need to state clearly what the income definition is and whether, and if so how, it is adjusted for household size. (It is conceivable that among rich countries there may be little correlation between inequalities in market and disposable income.)
5. There is another possible explanation for this study's results. As a panel study of 30 years of data from 21 OECD countries shows, the strongest associations between current income inequality and mortality is usually with premature mortality (below age 65 years)(3) (Again, this study is not referenced). Premature mortality is of course much more common in developing countries and less common in developed countries. This suggests that in exploring the reasons why their findings differ from others, the authors of MS1320 might consider looking at premature mortality separately from mortality in later life.
6. The last possible explanation of MS1320's findings might be that their data may not allow for analysis of long lag periods between changes in inequality and in health. One of the methodologically soundest analyses of lags suggests that the effects of a change in inequality

may take 12 years before they have come through completely.(4) It would be worth discussing the treatment of lag times and the difference in methods between these two studies. Do the method allow for a long slow accumulation of effects over the years?

#### Minor points

7. The Gini data in Table 1 is described briefly in paragraph 2 on p. 17, but the descriptions do not seem to fit the data in the table.
8. It is worth mentioning that when applied to whole populations even small differences in risk can have major consequences.
9. "On the other hand, reverse causality from trust and social capital to inequality cannot be ruled out." (p. 6) But see Uslaner. (5)
10. "This seems to suggest that inequality represents and intermediating variable through which social capital affects health rather than being the ultimate cause of impaired health." (p.6) This is not a necessary inference.
11. "A wider gap between poor and rich would thus encourage redistribution." (p.6) I think this is not supported by empirical data.
12. The importance of medical care as a determinant of mortality is overemphasised and is not supported by epidemiological observations.
13. Are the GNP per capita data PPP?

#### REFERENCES

1. R. G. Wilkinson, K. E. Pickett, Income inequality and population health: A review and explanation of the evidence. *Soc Sci Med* **62**, 1768 (Apr, 2006).
2. N. Kondo *et al.*, Income inequality, mortality, and self rated health: meta-analysis of multilevel studies. *BMJ* **339**, b4471 (2009).
3. R. Torre, M. Myrskylä, "Income inequality and population health: a panel data analysis on 21 developed countries" (Max Planck Institute for Demographic Research, Rostock, Germany, 2011).
4. H. Zheng, Do people die from income inequality of a decade ago? *Soc Sci Med* **75**, 36 (Jul, 2012).
5. E. Uslaner, *The moral foundations of trust*. (Cambridge University Press, Cambridge, 2002).