

Poverty, inequality and a political economy of mental health

J. K. Burns*

Department of Psychiatry, Nelson R Mandela School of Medicine, University of KwaZulu-Natal, Durban 4000, South Africa

The relationship between poverty and mental health is indisputable. However, to have an influence on the next set of sustainable global development goals, we need to understand the causal relationships between social determinants such as poverty, inequality, lack of education and unemployment; thereby clarifying which aspects of poverty are the key drivers of mental illness. Some of the major challenges identified by Lund (2014) in understanding the poverty–mental health relationship are discussed including: the need for appropriate poverty indicators; extending this research agenda to a broader range of mental health outcomes; the need to engage with theoretical concepts such as Amartya Sen’s capability framework; and the need to integrate the concept of income/economic inequality into studies of poverty and mental health. Although income inequality is a powerful driver of poor physical and mental health outcomes, it features rarely in research and discourse on social determinants of mental health. This paper interrogates in detail the relationships between poverty, income inequality and mental health, specifically: the role of income inequality as a mediator of the poverty–mental health relationship; the relative utility of commonly used income inequality metrics; and the likely mechanisms underlying the impact of inequality on mental health, including direct stress due to the setting up of social comparisons as well as the erosion of social capital leading to social fragmentation. Finally, we need to interrogate the upstream political, social and economic causes of inequality itself, since these should also become potential targets in efforts to promote sustainable development goals and improve population (mental) health. In particular, neoliberal (market-oriented) political doctrines lead to both increased income inequality and reduced social cohesion. In conclusion, understanding the relationships between politics, poverty, inequality and mental health outcomes requires us to develop a robust, evidence-based ‘political economy of mental health.’

Key words: Income inequality, mental health, political economy, poverty.

In 2015, the millenium development goals (MDGs) reach their target date and countries are expected to renegotiate the next set of sustainable goals to set the development agenda for the following decades. Extensive discussion is underway and a high-level panel appointed by the UN Secretary-General has already proposed a list of goals and indicators for consideration (United Nations, 2014). It is not realistic to expect mental health to feature as one of the core goals but, given the huge contribution of mental illness to the global burden of disease, as well as the clear links between mental illness and social determinants such as poverty, inequality, lack of education and unemployment (Patel & Kleinman, 2003; Lund *et al.* 2010), it is important to clarify the causal relationships between these social determinants and mental health. At present our understanding of these relationships is vague; if we want to influence the global development agenda so as to maximise its usefulness as a strategic tool for reducing the global burden of mental

illness, we need to identify the key social and economic drivers. In doing so we also need to be confident regarding which indicators best illustrate the interactions between social determinants and mental disorders.

Challenges in unravelling the relationship between poverty and mental illness

Lund *et al.* (2010) observe that there is no longer a debate as to whether poverty negatively impacts on mental health – the debate is about which aspects of poverty and deprivation are the strongest drivers. They note that heterogeneous findings across different domains of poverty are partly due to the use of diverse measures of poverty. Cooper *et al.* (2012) argue that inconsistent and imprecise measures of both poverty and mental illness hamper this field of research.

In a recent commentary, Lund (2014) highlights the problems and challenges faced in unravelling the complicated relationship between poverty and mental illness in low- and middle-income countries (LMICs) and proposed a research agenda aimed at bringing clarity to the issue. He raises many important issues, several of which will be discussed here:

* Address for correspondence: J. K. Burns, Department of Psychiatry, Nelson R Mandela School of Medicine, University of KwaZulu-Natal, Durban 4000, South Africa.
(Email: burns@ukzn.ac.za)

There needs to be more precise measurement of poverty

The measurement of poverty needs to include the breaking down of 'poverty' into specific indicators such as income, expenditure, assets, education, employment and food security; and these should be reported at both individual and household level Lund (2014).

Importantly, there are problems with most commonly used poverty indicators. For example, income-based measures of poverty may misrepresent the extent of deprivation. The meaning of individual or household income varies depending on context and may not be comparable across societies or even communities. Thus a frequently cited measure of poverty at the population level – the proportion of people living on less than \$1 a day – has different implications for the extent of societal poverty depending on the socioeconomic context and relative value of this figure. Furthermore, it is important to note that simple income is not the only factor determining level of deprivation; other factors such as the availability of and access to health care, social benefits and education may exacerbate or offset the effects of low income.

Perhaps the most common indicator used to measure economic growth and the extent of population poverty is 'gross domestic product *per capita*' (GDP/c). But GDP/c does not show the distribution of growth in the population, nor does it reflect accurately the extent of poverty; since a disproportionate share of the total 'product' may be concentrated in the hands of a few. This is the case in most countries with a significant income inequality gap e.g. South Africa, where in 2011 the top 20% of earners controlled 70% of the wealth, while the share of the bottom 20% was 2.5% (World Bank, 2014).

Studies need to be stratified according to diverse socioeconomic strata

For these reasons, Lund (2014) emphasises that the poverty–mental health relationship needs to be examined at different levels of poverty/wealth, as the effects may differ at different socioeconomic levels. Specifically we need to stratify by income levels in studying the effects of poverty on mental health.

There should be a broader approach to mental health outcomes including different levels of severity of mental illness

Disorders currently under-researched in relation to poverty, such as schizophrenia, bipolar disorder, substance abuse and child and adolescent disorders need

to be included in the social determinants research agenda (Lund, 2014). Poverty may interact with different disorders in different ways. In addition, the poverty–mental health relationship needs to be interrogated across the lifespan, adopting a developmental perspective, including at different levels of severity of mental illness.

Broadening the approach to mental health outcomes in poverty research coincides neatly with contemporary conceptualisation of mental health and illness as dimensional phenomena, overlapping symptomatically and genetically, and manifesting in populations as a continuum from 'normality' to disorder (First, 2010). Further rationale lies in the growing evidence for complex gene–environment interactions and epigenetic mechanisms underlying the genesis of mental disorders (Toyokawa *et al.* 2012). Individual and ecological level aspects of poverty are likely to have their deleterious effects on mental health, at least in part, through interactions with susceptibility genes and modification of gene expression. Such genomic research frequently reveals a dose–response relationship between environmental exposures and mental health outcomes; and it is reasonable to anticipate that the inclusion of a broader range of mental health phenotypes in relation to poverty will yield a more diverse range of poverty–mental health relationships.

Future research should be theory-driven

Lund (2014) maintains that research approaches need to engage with theoretical concepts such as Amartya Sen's capability framework (Sen, 1999). The capabilities framework is a powerful construct in disability discourse related to the social and economic isolation experienced by people with mental illness (Ware *et al.* 2007; Baumgartner & Burns, 2014). Shifting the focus from a position where disability is located in personal functioning to a position where disability is located in the opportunities provided by society for social reintegration and participation, Sen's work provides a basis for conceptualising social integration as 'a process, unfolding over time, through which individuals who have been psychiatrically disabled increasingly develop and exercise their capacities for connectedness and citizenship' (Ware *et al.* 2007). Similarly, in relation to poverty and (mental) health, the capabilities framework can help shift the focus away from considering economic exclusion a consequence of individual dysfunction; towards an understanding of the structural social, economic and political forces that so often render people vulnerable to both poverty and mental illness. In thinking about mental health interventions, this then means we should adopt approaches that directly address the

structural barriers limiting opportunities for economic integration and participation.

More research is required on the associations between economic inequality and mental health

Lund (2014) highlights the need for ‘more robust research on the association between economic inequality and mental health, at national and regional levels.’ He notes that to avoid the ‘ecological fallacy’, studies need to use multilevel methods including both population and individual level data. Interestingly Lund uses the term ‘economic inequality’ (also used by Thomas Pickett (2014) whose work is discussed below) as opposed to ‘income inequality’ – the latter concept is more commonly associated with the research on the effects of inequality on health. Although there is considerable evidence that inequality is a powerful driver of poor health outcomes, it is often overlooked in discourse relating to the social determinants of health and mental health. In the lead up to negotiations to finalise the next set of development goals, there is a lobby to include the reduction of inequality as a key target for states (Stiglitz & Doyle, 2014). For this reason, income or economic inequality is the focus of the second part of this paper.

Income inequality as a powerful driver of (mental) health

Income inequality is a measure of the ‘rich-poor gap’ in any given society and is a concept of great relevance to LMICs, many of which are among the most inequitable in the world. There are multiple associations between income inequality and health status. In the 1980s and 1990s, Wilkinson demonstrated that the relative distribution of income in a society matters in its own right for population health (Wilkinson, 1992, 1996) and this has been replicated in multiple studies (e.g. Kawachi *et al.* 2002; Subramanian & Kawachi, 2004; Wilkinson & Pickett, 2006). Income inequality is associated with reduced life expectancy (Kondo *et al.* 2009; Chiavegatto Filho *et al.* 2012), increased infant mortality (Pampel & Pillai, 1986; Macinko *et al.* 2004), poor self-rated health (Subramanian *et al.* 2003; Mansyur *et al.* 2008) and violence (Kennedy *et al.* 1998; Nadanovsky & Cunha-Cruz, 2009; Pabayo *et al.* 2014a). Some studies contradict the income inequality hypothesis (IIH) – especially studies that measure income inequality at a smaller geographical scale (e.g. at neighbourhood or US county level) (Lynch *et al.* 2004) – and several authors have suggested that whether the IIH holds as a determinant of poor health could depend on the geographical scale at which it is measured (Chen & Gotway Crawford, 2012).

There is a growing evidence that income inequality is associated with increased risk for mental disorders, including common mental disorders (Weich *et al.* 2001), depression (Ahern and Galea, 2006; Pickett & Wilkinson, 2010; Messias *et al.* 2011; Chiavegatto Filho *et al.* 2013; Pabayo *et al.* 2014b), suicide (Gunnell *et al.* 2003), alcohol and cannabis use (Galea *et al.* 2007), first-episode psychosis (Boydell *et al.* 2004; Burns & Esterhuizen, 2008) and schizophrenia (Burns *et al.* 2014). These studies have measured income inequality at both national/country-level and local ward/municipality-level. There have been some negative studies also, for example, in relation to depression from the World Mental Health Surveys (Rai *et al.* 2013). One possible explanation for this somewhat anomalous finding is the omission from this study of the majority of countries with either very high Ginis (50 or above) or low Ginis (30 or below). As will be discussed further, the negative (mental) health impact of inequality may only become evident when the ‘sample’ has an adequate distribution of inequality measures.

Despite the weight of evidence for income inequality as a risk factor for mental illness, it is still widely under-acknowledged as a driver (Pickett & Wilkinson, 2010). Cohen (2002) argues that psychiatry has failed to focus on issues pertaining to social inequality despite the growing evidence for a strong association.

Key issues to address in relation to income inequality and mental health

If we are to advance understanding of how economic disparities, and in particular inequitable distribution of income and wealth, act as powerful drivers of mental disorder, and thus contribute to the debate on global development goals, then we must engage with several key issues concerning this relationship.

First we must consider *which indicators of income/economic inequality are best suited* as plausible exposures in relation to disparities in population mental health. ‘Plausibility’ – is a plausible biological mechanism that can be offered linking exposure and outcome – is a key criterion for establishing causal relationships in health epidemiology (Hill, 1965). The Gini coefficient is most commonly used in World Bank monitoring of countries’ economic status. This is a composite index derived from a ratio of two areas in the Lorenz curve diagram. The Gini however does not show where in the distribution the inequality occurs; and it also tends to be oversensitive to changes in the middle of the distribution and insensitive to changes at the top and bottom. This is problematic according to the Chilean economist Gabriel Palma who demonstrated that middle class incomes almost always represent

about half of gross national income while the other half is split between the richest 10% and poorest 40% (Palma, 2011). Importantly the share of those two groups varies considerably across countries; thus two very different income distributions can have the same Gini index. The 20/20 ratio inequality metric addresses the problem of the middle 60% statistically obscuring inequality that is otherwise present in the distribution – this is the ratio of the income of the top 20% of earners to that of the bottom 20% of earners. There is also a case for comparing deciles (i.e., 10/10 ratio) or even percentiles (1/1 ratio) rather than quintiles (20/20 ratio), since the latter may hide inequalities within distribution subgroups. Another metric that provides information about the shape of income distribution (rather than the level of inequality) is the ratio of given percentiles to the median. So for example if, over time, the ratio of the 80th or 90th percentile to the mean increases, this would indicate that a simultaneous increase in inequality (e.g. rise in the Gini coefficient) would be a consequence of disproportionate gains by the upper income earners.

The utility of different measures of income inequality in relation to poverty and mental health relates to the question of *how inequality interacts with poverty, growth and other economic forces*. Lund *et al.* (2010) asks how income inequality influences the poverty–mental health relationship; and argues that concepts of income and economic inequality should be integrated into studies of poverty and mental health. Lund notes that in more equitable societies (e.g. Ethiopia, Nigeria) there seems to be a weaker association between poverty and mental disorders; whereas in highly inequitable Chile and Brazil, this association is stronger. In other words, while poverty is independently accompanied by a myriad of noxious factors that are bad for mental health (e.g. overcrowding, food scarcity, exposure to neighbourhood stressors), poverty in the context of marked inequality has an even greater negative impact on mental health. As mentioned earlier, GDP/c is a marker of economic growth, but rising GDP/c over time (i.e., ‘growth’) does not necessarily translate into improved population mental health. In fact, as first pointed out by Simon Kuznets in the 1950s, in regions with low levels of *per capita* income, inequality initially increases over time with rising GDP/c as the poorest group’s share of the overall income growth decreases (Kuznets, 1955). Kuznets argued that in the later stages of economic development, inequality would start to fall, returning to its initial levels after 60 years (the ‘Kuznets’ hypothesis’). The work of French economists Thomas Piketty and Emmanuel Saez, using data from high-income countries (HICs) over the last 200 years, seems to disprove Kuznets’ predictions, showing that increasing growth

has been accompanied by steadily rising income inequality as capital accumulates in the higher income group (Piketty & Saez, 2003; Piketty, 2014). Taken together with the previous point regarding the impact of inequality on the poverty–mental health relationship, Piketty’s findings have very serious and worrying implications for the likely future epidemiology of mental disorders within LMICs. Middle-income countries such as South Africa and Brazil – that have what are quaintly termed ‘emerging economies’ – have some of the highest Gini coefficients in the world. If economic ‘growth’ worsens inequality, and inequality increases risk for mental illness, then the future burden of mental disorders in such contexts is likely to be substantially greater than it is currently.

In studying the effects of income inequality on mental health, it is *important to consider the geographical scale* at which its impact is apparent. Although earlier research suggested that the income inequality–mental health association was more evident in studies analysing countries and states than in studies of smaller geographical areas (e.g. municipalities/US counties or neighbourhoods) (Subramanian & Kawachi, 2004), several recent analyses also show an effect for these smaller areas (e.g. Chiavegatto Filho *et al.* 2013).

A related question is *whether income inequality affects all individuals in a society similarly in terms of risk for mental illness* or whether the added burden of adverse health outcomes is partitioned to the most deprived segment of the community. The earlier discussion regarding the impact of income inequality on the poverty–mental health relationship would suggest that the risk is not evenly distributed and that the negative effects of income inequality would be most evident in the poorest section of the population. And indeed, in South London, Boydell *et al.* (2004) demonstrated that only in the most deprived wards had increased incidence of schizophrenia associated with increasing inequality. However, there is now sufficient evidence to be confident that inequality is a potent risk factor for individuals independent of their income or wealth – as Kawachi *et al.* (2002) have put it: individual health depends not just on personal income, but also on the incomes of other members of one’s community or society. If this is the case, then it follows that income inequality is likely to impact on (mental) health through setting up stressful social comparisons as well as disrupting social dynamics and support structures.

Inequality is likely to impact on mental health via a range of mechanisms; however most evidence suggest two related primary mechanisms. First, inequality causes direct stress due to social comparisons where poorer individuals develop feelings of failure, resentment, shame and ‘social defeat’ when comparing themselves

with their rich neighbours (Chiavegatto Filho *et al.* 2013). Second, inequality erodes social capital in communities and societies, leading to social fragmentation and leaving individuals vulnerable to psychosocial stressors (Wilkinson, 1996; Mansyur *et al.* 2008). Indeed an inverse relationship exists between income inequality and social capital (Kawachi & Kennedy, 1997); and lower neighbourhood-level social capital has been correlated with depression at the population level within LMIC settings (Tomita & Burns, 2013).

What are the causes of economic inequality?

In concluding this discussion it is important to consider the upstream causes of economic inequality, since these should also become potential targets in efforts to promote sustainable development goals and improve population (mental) health. Coburn (2000) argues that we have not paid sufficient attention to the social context of the inequality–health relationship and to the causes of inequality itself. He maintains that neoliberal (market-oriented) political doctrines lead to both increased income inequality and reduced social cohesion, undermining the ‘welfare state’. The rise of neoliberalism is related to globalisation and the changing class structures of advanced capitalist societies and neoliberal policies are ‘associated with a ‘package’ of other likely health-deleterious policies (e.g. de-unionisation, fiscal austerity and privatisation)’ (Coburn, 2004).

There are many reports of how the globalisation of neoliberalism, with its emphasis on the market, has led to breakdown of the welfare state and Keynesian economic systems and a deterioration in population health over the last 30 years in both HICs and LMICs – the latter usually in the context of structural adjustment programmes (SAPs) imposed on governments as a condition of loans from the International Monetary Fund (IMF) and World Bank (Bhutta, 2001; Ikamari, 2004; Oliver, 2006; Stuckler *et al.* 2008; Shandra *et al.* 2010; Hossen & Westhues, 2012; Baker *et al.* 2014).

The radical economic changes in post-Soviet Russia during the 1990s make for a tragic but informative natural experiment on the effects of neoliberal ‘shock therapy’ (Klein, 2007) on population mental health. Between 1990 and 2003, the suicide rate almost doubled to 39.7 suicides per 100 000 people, placing Russia among the countries with the highest suicide rates in the world (Veltishev, 2003; Webster, 2003). In the words of a Russian economist: ‘The main source of suicide during the last 10 years is social and economic problems linked to people not being able to adapt to the new conditions (since the fall of Soviet Union)’ (Paton Walsch, 2003). Linked to both suicide and the ‘new conditions’ was a steep rise in both homicide rates (to three times the global average (Leon *et al.* 1997; UNDP Moscow Office, 2003))

and alcohol consumption (Nemtsov, 2000; Reitan, 2000) during this period. Not surprisingly, Russia’s Gini soared from 23.8 in 1988 to 48.4 in 1993 (World Bank, 2014); and it is not unreasonable to assume that rising inequality was a key mediator between political economic change and plunging population mental health.

Concluding comments

With the negotiation of the next set of sustainable development goals only a year away, those of us who wish to see the final goals and targets focus more accurately on the structural forces driving mental illness (especially within LMIC contexts), need to improve understanding of the causal pathways linking these social determinants and mental health. The poverty–mental health relationship can only be understood meaningfully by integrating the concepts of income and economic inequality into both the discourse and research in this field. Inequality is a powerful and noxious driver of poverty, social fragmentation and human physical and mental suffering. Furthermore, we need to interrogate the upstream political, social and economic causes of inequality itself. As Vicente Navarro phrases it, there is ‘a need to establish the interactions between politics, policy and health outcomes’ (Navarro *et al.* 2006). If we wish to understand the relationships between politics, poverty, inequality and mental health outcomes, now is the time to begin to develop a robust, evidence-based ‘political economy of mental health.’

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References

- Ahern J, Galea S. (2006). Social context and depression after a disaster: the role of income inequality. *Journal of Epidemiology and Community Health* 60(9): 766–70.
- Baker P, Kay A, Walls H. (2014) Trade and investment liberalization and Asia’s noncommunicable disease epidemic: a synthesis of data and existing literature. *Global Health* 10(1): 66. [Epub ahead of print]

- Baumgartner JN, Burns JK** (2014). Measuring social inclusion – a key outcome in global mental health. *International Journal of Epidemiology* **43**, 354–364. doi: i10.1093/ije/ dyt224.
- Boydell J, Van Os J, McKenzie K, Murray RM** (2004). The association of inequality with the incidence of schizophrenia – an ecological study. *Social Psychiatry and Psychiatric Epidemiology* **39**, 597–599.
- Burns JK, Esterhuizen T** (2008). Poverty, inequality and the treated incidence of first-episode psychosis – an ecological study from South Africa. *Social Psychiatry and Psychiatric Epidemiology* **43**, 331–335.
- Burns JK, Tomita MA, Kapadia AS** (2014). Income inequality and schizophrenia: increased schizophrenia incidence in countries with high levels of income inequality. *International Journal of Social Psychiatry* **60**, 185–196.
- Bhutta Z** (2001). Structural adjustment and the impact on health and society: a perspective from Pakistan. *International Journal of Epidemiology* **30**, 712–716.
- Chen Z, Gotway Crawford CA** (2012). The role of geographical scale in testing the income inequality hypothesis as an explanation of health disparities. *Social Science and Medicine* **75**, 1022–1031.
- Chiavegatto Filho ADP, Gotlieb SLD, Kawachi I** (2012). Cause-specific mortality and income inequality in São Paulo, Brazil. *Revista Saude Publica* **46**, 712–718.
- Chiavegatto Filho AD, Kawachi I, Wang YP, Viana MC, Andrade LH** (2013). Does income inequality get under the skin? A multilevel analysis of depression, anxiety and mental disorders in Sao Paulo, Brazil. *Journal of Epidemiology and Community Health* **67**, 966–972.
- Coburn D** (2000). Income inequality, social cohesion and the health status of populations: the role of neo-liberalism. *Social Science and Medicine* **51**, 135–146.
- Coburn D** (2004). Beyond the income inequality hypothesis: class, neo-liberalism, and health inequalities. *Social Science and Medicine* **58**, 41–56.
- Cohen CI** (2002). Economic grand rounds: social inequality and health: will psychiatry assume centre stage? *Psychiatric Services* **53**, 937–939.
- Cooper S, Lund C, Kakuma R** (2012). The measurement of poverty in psychiatric epidemiology in LMICs: critical review and recommendations. *Social Psychiatry and Psychiatric Epidemiology* **47**, 1499–1516.
- First MB** (2010). Paradigm shifts and the development of the diagnostic and statistical manual of mental disorders: part experiences and future aspirations. *Canadian Journal of Psychiatry* **55**, 692–700.
- Galea S, Ahern J, Tracy M, Vlahov D** (2007). Neighborhood income and income distribution and the use of cigarettes, alcohol, and marijuana. *American Journal of Preventive Medicine* **32**(6S), S195–S202.
- Gunnell D, Middleton N, Whitley E, Dorling D, Franker S** (2003). Why are suicide rates rising in young men but falling in the elderly? *Social Science and Medicine* **57**, 595–611.
- Hill AB** (1965). The environment and disease: association or causation? *Proceedings of the Royal Society of Medicine* **58**, 295–300.
- Hossen A, Westhues A** (2012). The medicine that might kill the patient: structural adjustment and its impacts on health care in Bangladesh. *Social Work in Public Health* **27**, 213–228.
- Ikamari LDE** (2004). An upsurge in early childhood mortality in Kenya: a search for explanations. *African Journal of Health Sciences* **11**, 9–20.
- Kawachi I, Kennedy BP** (1997). Socioeconomic determinants of health: health and social cohesion: why care about income inequality? *British Medical Journal* **314**, 1037–1040.
- Kawachi I, Subramanian SV, Almeida-Filho N** (2002). A glossary of health inequalities. *Journal of Epidemiology and Community Health* **56**, 647–652.
- Kennedy BP, Kawachi I, Prothrow-Stith D, Lochner K, Gupta V** (1998). Social capital, income inequality, and firearm violent crime. *Social Science and Medicine* **47**, 7e17.
- Klein N** (2007). *The Shock Doctrine: the Rise of Disaster Capitalism*. Penguin Books: London.
- Kondo N, Sembajwe G, Kawachi I, van Dam RM, Subramanian SV, Yamagata Z** (2009). Income inequality, mortality, and self rated health: meta-analysis of multilevel studies. *British Medical Journal* **339**, b4471.
- Kuznets S** (1955). Economic growth and income inequality. *American Economic Review* **45**, 1–28.
- Leon DA, Chenet L, Shkolnikov VM, Zakharov S, Shapiro J, Rakhmanova G, Vassin S, McKee M** (1997). Huge variation in Russian mortality rates, 1984–94: artefact, alcohol, or what? *Lancet* **350**, 383–388.
- Lund C** (2014). Poverty and mental health: towards a research agenda for low and middle-income countries. Commentary on Tampubolon and Hanandita (2014). *Social Science and Medicine* **111**, 134–136.
- Lund C, Breen A, Flisher AJ, Kakuma R, Corrigall J, Joska JA, Swartz L, Patel V** (2010). Poverty and common mental disorders in low and middle income countries: a systematic review. *Social Science and Medicine* **71**, 517–528.
- Lynch JW, Davey Smith G, Harper S, Hillemeier M, Ross N, Kaplan GA, Wolfson M** (2004). Is income inequality a determinant of population health? Part 1. A systematic review. *Milbank Quarterly* **82**, 5–99.
- Macinko JA, Shi L, Starfield B** (2004). Wage inequality, the health system, and infant mortality in wealthy industrialized countries, 1970–1996. *Social Science and Medicine* **58**, 279–292.
- Mansyur C, Amick BC, Harrist RB, Franzini L** (2008). Social capital, income inequality, and self-rated health in 45 countries. *Social Science and Medicine* **66**, 43–56.
- Messias E, Eaton WW, Grooms AN** (2011). Economic grand rounds: income inequality and depression prevalence across the United States: an ecological study. *Psychiatric Services* **62**, 710–712.
- Nadanovsky P, Cunha-Cruz J** (2009). The relative contribution of income inequality and imprisonment to the variation in homicide rates among Developed (OECD), South and Central American countries. *Social Science and Medicine* **69**, 1343–1350.
- Navarro V, Muntaner C, Borrell C, Benach J, Quiroga Á, Rodríguez-Sanz M, Vergés N, Pasarín MI** (2006). Politics and health outcomes. *Lancet* **368**, 1033–1037.

- Nemtsov AV** (2000). Estimates of total alcohol consumption in Russia, 1980–1994. *Drug and Alcohol Dependence* **58**, 133–142.
- Oliver HC** (2006). In the wake of structural adjustment programs. *Canadian Journal of Public Health* **97**, 217–221.
- Pabayo R, Molnar BE, Kawachi I** (2014a). The role of neighborhood income inequality in adolescent aggression and violence. *Journal of Adolescent Health* **55**, 571e579.
- Pabayo R, Kawachi I, Gilman SE** (2014b). Income inequality among American states and the incidence of major depression. *Journal of Epidemiology Community Health* **68**, 110–115.
- Palma JG** (2011). Homogeneous middles vs. heterogeneous tails, and the end of the 'Inverted-U': the share of the rich is what it's all about. *Cambridge Working Papers in Economics (CWPE)* 1111. Cambridge University. Retrieved 21 November 2014.
- Pampel FC, Pillai VK** (1986). Patterns and determinants of infant mortality in developed nations. *Demography* **23**, 525–542.
- Patel V, Kleinman A** (2003). Poverty and common mental disorders in developing countries. *Bulletin of the World Health Organization* **81**, 609–615.
- Paton Walsch N** (2003). Russia's suicide rate doubles. *The Guardian*. Accessed 22 November 2014 <http://www.theguardian.com/world/2003/jul/09/russia.nickpatonwalsh>.
- Pickett KE, Wilkinson RG** (2010). Inequality: an underacknowledged source of mental illness and distress. *British Journal of Psychiatry* **197**, 426–428.
- Pickett T** (2014). *Capital in the Twenty-First Century*. Belknap/Harvard University Press: Cambridge, Mass.
- Pickett T, Saez E** (2003). Income inequality in the United States, 1913–1998. *The Quarterly Journal of Economics* **118**, 1. doi:10.1162/00335530360535135.
- Rai D, Zitko P, Jones K, Lynch J, Araya R** (2013). Country- and individual-level socioeconomic determinants of depression: multilevel cross-national comparison. *British Journal of Psychiatry* **202**, 195–203.
- Reitan TC** (2000). Does alcohol matter? Public health in Russia and the Baltic countries before, during, and after the transition. *Contemporary Drug Problems* **27**, 511–560.
- Sen A** (1999). *Development as Freedom*. Oxford University Press: Oxford.
- Shandra CL, Shandra JM, Shircliff E, London B** (2010). The International Monetary Fund and child mortality: a cross-national analysis of Sub-Saharan Africa. *International Review of Modern Sociology* **36**, 169–193.
- Stiglitz JE, Doyle MW** (2014). Eliminating extreme inequality: a sustainable development goal, 2015–2030. *Ethics and International Affairs Policy Brief*, Spring 2014: 28.1. Accessed 22 November 2014 <http://www.ethicsandinternationalaffairs.org/2014/eliminating-extreme-inequality-a-sustainable-development-goal-2015-2030/>.
- Stuckler D, King LP, Basu S** (2008). International Monetary Fund programs and tuberculosis outcomes in post-communist countries. *PLoS Medicine* **5**, e143, 1079–1090.
- Subramanian SV, Kawachi I** (2004). Income inequality and health: what have we learned so far? *Epidemiology Review* **26**, 78–91.
- Subramanian SV, Delgado I, Jadue L, Vega J, Kawachi I** (2003). Income inequality and health: multilevel analysis of Chilean communities. *Journal of Epidemiology Community Health* **57**, 844–848.
- Tomita A, Burns JK** (2013). A multilevel analysis of association between neighborhood social capital and depression: evidence from the first South African National Income Dynamics Study. *Journal of Affective Disorders* **144**, 101–105. doi: 10.1016/j.jad.2012.05.066.
- Toyokawa S, Uddin M, Koenen KC, Galea S** (2012). How does the social environment 'get into the mind'? Epigenetics at the intersection of social and psychiatric epidemiology. *Social Science and Medicine* **74**, 67–74.
- UNDP Moscow Office** (2003). WHO blames violence: 1 650 000 deaths a year. *UN in Russia: Activities for Sustainable Development* **4**, 14–15. Accessed 22 November 2014 http://www.unrussia.ru/sites/default/files/docs/eng/OON29_eng_07-08-2003.pdf.
- United Nations** (2014). *The Secretary-General's High-Level Panel of Eminent Persons on the Post-2015 Development Agenda*. Accessed 22 November 2014 <http://www.un.org/sg/management/hlppost2015.shtml>.
- Veltishev DY** (2003). *Violence and Health of the Population of Russia*. Moscow Scientific-Research Institute of Psychiatry of the Ministry of Health of the Russian Federation, WHO, Geneva.
- Ware NC, Hopper K, Tugenberg T, Dickey B, Fisher D** (2007). Connectedness and citizenship: redefining social integration. *Psychiatric Services* **58**, 469–474.
- Webster P** (2003). Suicide rates in Russia on the increase. *The Lancet* **362**, 220. doi:10.1016/S0140-6736(03)13960-8.
- Weich S, Lewis G, Jenkins SP** (2001). Income inequality and the prevalence of common mental disorders in Britain. *British Journal of Psychiatry* **178**, 222–227.
- Wikipedia** (2014). *Income Inequality Metrics*. Accessed 22 November 2014 http://en.wikipedia.org/wiki/Income_inequality_metrics.
- Wilkinson RG** (1992). Income distribution and life expectancy. *British Medical Journal* **304**, 165–168.
- Wilkinson RG** (1996). *Unhealthy Societies: the Afflictions of Inequality*. Routledge: London.
- Wilkinson RG, Pickett KE** (2006). Income inequality and population health: a review and explanation of the evidence. *Social Science and Medicine* **62**, 1768–1784.
- World Bank** (2014). *Gini Index*. Accessed 22 November 2014 <http://data.worldbank.org/indicator/SI.POV.GINI>.