Self-reported health and socio-economic inequalities in England, 1996–2009: Repeated national cross-sectional study

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ABSTRACT

Tackling social inequalities in health has been a priority for recent UK governments. We used repeated national cross-sectional data for 155,311 participants (aged $\geq$16 years) in the Health Survey of England to examine trends in socio-economic inequalities in self-reported health over a recent period of sustained policy focus by successive UK governments aimed at tackling social inequalities in health. Socio-economic related inequalities in self-reported health were estimated using the Registrar General's occupational classification (1996–2009), and for sensitivity analyses, the National Statistics Socio-Economic Classification (NS-SEC; 2001–2011). Multi-level regression was used to evaluate time trends in General Health Questionnaire (GHQ-12) scores and bad or very bad self-assessed health (SAH), as well as EQ-5D utility scores.

The study found that the probability of reporting GHQ-12 scores $\geq$4 and $\geq$1 was higher in those from lower social classes, and decreased for all social classes between 1997 and 2009. For SAH, the probability of reporting bad or very bad health remained relatively constant for social class I (professional) [0.028 (95%CI: 0.026, 0.029) in 1996 compared to 0.028 (95%CI: 0.024, 0.032) in 2009], but increased in lower social classes, with the greatest increase observed amongst those in social class V (unskilled manual) [0.089 (95%CI: 0.085, 0.093) in 1996 compared to 0.155 (95%CI: 0.141, 0.168) in 2009]. EQ-5D utility scores were lower for those in lower social classes, but remained comparable across survey years. In sensitivity analyses using the NS-SEC, health outcomes improved from 2001 to 2011, with no evidence of widening socio-economic inequalities. Our findings suggest that socio-economic inequalities have persisted, with evidence of widening for some adverse self-reported health outcomes.

1. Introduction

A plethora of research highlights that those of lower socioeconomic position are at increased risk of adverse health outcomes, including cardiovascular disease (Mackenbach et al., 2003), cancers (Coleman et al., 2004; Forrest et al., 2013; Parikh et al., 2003), mental health problems (Jokela et al., 2013), and unhealthy lifestyle behavioural factors (Devaux and Sassi, 2013; Rumble and Pevalin, 2013). This is likely to require increased expenditure the by health services and result in reduced productivity (Marmot et al., 2010; WHO, 2008). It is also generally accepted that greater availability of economic resources will tend to result in improvements in population health (Hurd and Kapteyn, 2003). However, it is increasingly felt that unequal distributions of resources within populations drive social inequalities in health (Babones, 2008; Wilkinson and Pickett, 2006). Evidence from the UK, and other European countries, suggests a widening socioeconomic gradient in adverse health outcomes during the latter 20th century (Black et al., 1980; Mackenbach et al., 2003; Marmot et al., 1991). However, it was not until the late 1990's, after the publication of the Acheson Report (Acheson, 1998), that tackling social inequalities in health became a priority for health policy in the UK.

The period of the most recent UK Labour governments (1997–2010) saw increased focus and investment in preventing poor health through addressing underlying determinants of health inequalities, including educational attainment (OECD, 2009), unemployment, housing and through targeting deprived

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communities (DoH, 2003), supported by one of the longest time periods of sustained economic prosperity (Benati, 2008) that generated additional spending for the public sector and increased real incomes across the income spectrum (Browne and Phillips, 2010). There are concerns these efforts and investments did not have their desired effects (Mackenbach, 2011). Whilst there is some evidence suggesting the UK National Health Service (NHS) provided a more equitable service as a result (Cooper et al., 2009), this has not translated into a reduction in social inequalities in health (Devaux and Sassi, 2013; Jokela et al., 2013; Rumble and Pevalin, 2013; Scholes et al., 2012; Thomas et al., 2010).

The impact of economic downturns on social inequalities in health has been widely studied, with conflicting findings. In Japan, economic stagnation during the late 1990's and early 2000's was associated with a narrowing in social inequalities in health (Kachi et al., 2013), whilst in New Zealand, South Korea and Russia periods of economic hardships were associated with widening in social inequalities in health (Blakely et al., 2008; Hong et al., 2011; Plavinski et al., 2003), with evidence from European countries suggesting minimal changes during economic downturns (Kunst et al., 2005). The range of findings reflects differences in government spending, welfare state provision and changes in income during these periods of economic downturns, and the complex interactions between these factors (Benzeval and Judge, 2001; Eikemo et al., 2008; Wilkinson and Pickett, 2006). What has been less studied are trends in social inequalities in health across economic cycles, and when studied, has predominantly focussed on objective measures of health outcome, including mortality and life expectancy, risk factors for poor health and use of health services (Devaux and Sassi, 2013; Jokela et al., 2013; Rumble and Pevalin, 2013; Scholes et al., 2012; Thomas et al., 2010).

Measuring the population's health can be achieved in a number of ways, including monitoring changes in objective measures of health outcomes and health services use, metrics used by the authorities in the UK to monitor trends in social inequalities in health (DoH, 2003). However, at the population-level policy concerns should not be limited to objective measures of health, but encompass wider impacts on health, including health-related quality of life and mental well-being (WHO, 1986). However, measuring the health of the population is complex, and choices have to be made on whom we choose to sample to represent the population, and the tools used to measure and quantify the population's health status. The use of self-reported measures of health status in national health surveys offer an alternative approach to monitoring trends and inequalities in health over time, and investigating the impact of major policy initiatives (Fitzpatrick et al., 1992; Layard, 2010). In addition, the impact of national policy initiatives may not immediately translate into improvements in mortality or objective measures of morbidity, whilst self-reported measures of health provide reliable predictors of the health of the population (Benjamins et al., 2004; Jylha, 2009), and capture outcomes of relevance to individuals (Patrick and Chiang, 2000).

A range of self-reported measures of health have been developed. However, each differs in what it measures, the error in its measurement, its ability to differentiate health status of different population sub-groups, and its potential for capturing biases amongst responders and non-responders (Etches et al., 2006; Macran et al., 2003; Ziebarth, 2010). In addition, these tools use different approaches to measuring health status of individuals, and in the subsequent quantification of good and poor health (Goldberg et al., 1998; Manor et al., 2000). The objective of this study was to use a range of self-reported measures of health status to estimate secular trends in socio-economic related health inequalities in England over a recent 14 year period of sustained policy focus by UK governments on health inequalities. The study analyses national data for representative samples of the English population and uses a range of self-reported health status measurement tools, thereby maximising the relevance of the findings to the broader debates about socio-economic inequalities in health.

2. Methods

2.1. Data source

Data for this study came from the Health Survey for England (HSE), a series of annual surveys of nationally representative non-institutionalised residents in England. A detailed description of methods applied by the HSE is provided elsewhere (Mindell et al., 2012). The survey consists of a core set of demographic, economic and health questions asked each year. In addition, different annual surveys focus on a single or multiple health problems, and/or boost samples that allow investigation of specific population subgroups that would otherwise be under-sampled. The HSE adopts a two-stage stratified random sampling process using a Postcode Address File as the primary sampling unit (PSU). Individuals selected in one year are excluded for the following 3 years, although the relatively small proportions recruited from the eligible population makes it unlikely individuals would be recruited in subsequent years (Mindell et al., 2012). Adult interview response rates have fallen since introduction from approximately 70% in surveys undertaken in the 1990's to a plateau of approximately 60% in the late 2000's (Mindell et al., 2012). This analysis is based on the annual surveys undertaken from 1996 to 2011 and excludes additional participants sampled for the purpose of boosting population subgroups (boost samples of adults aged $\geq$65 years in 2000 and 2005 and black and minority ethnic groups in 1999 and 2004). This study uses secondary data with no participant identifiers, and therefore ethical approval was not required.

2.2. Measures of health status

2.2.1. General Health Questionnaire

The General Health Questionnaire (GHQ) was developed in the 1970's and provides a measure of current mental health (D. Goldberg and Williams, 2000). There are four versions of the GHQ, with the shorter 12-item version (GHQ-12) used in the HSE. The GHQ-12 has been widely used in many national surveys for measuring psychological well-being, and has been found to be negatively correlated with global measures of health-related quality of life (HRQoL) (D. P. Goldberg et al., 1997). Responses to the 12 items are answered on a four-category Likert scale with response categories of 'not at all', 'no more than usual', 'rather more than usual' and 'much more than usual'; the first and second categories are given a score of 0, and the third and fourth categories a score of 1. Scores from the 12 items are summed to generate a total score out of 12. Responses to the GHQ-12 were dichotomised for the purposes of this study. However, there are no strict guidelines on the thresholds for dichotomisation. Previous studies have suggested that the mean GHQ-12 score for the study population can be used as a threshold (Goldberg et al., 1998), whilst GHQ-12 scores $\geq$4 have been found to indicate poor mental health (D. Goldberg and Williams, 2000). In the HSE study years where GHQ-12 data were collected, the mean score was approximately 1.3. For this study, two thresholds were applied: (1) GHQ-12 score $\geq$4; (2) GHQ-12 score $\geq$1. GHQ responses were collected from participants every study year with the exception of 1996, 2007 and 2011. This analysis accounts for errors in the GHQ data (UK Data Archive, 2011).

2.2.2. Self-assessed health (SAH)

Self-assessed health is a commonly used measure of health