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Social class inequalities in health among occupational cohorts from Finland, Britain and Japan: A follow up study

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ABSTRACT

We examined whether relative occupational social class inequalities in physical health functioning widen, narrow or remain stable among white collar employees from three affluent countries. Health functioning was assessed twice in occupational cohorts from Britain (1997–1999 and 2003–2004), Finland (2000–2002 and 2007) and Japan (1998–1999 and 2003). Widening inequalities were seen for British and Finnish men, whereas inequalities among British and Finnish women remained relatively stable. Japanese women showed reverse inequalities at follow up, but no health inequalities were seen among Japanese men. Health behaviours and social relations explained 4–37% of the magnitude in health inequalities, but not their widening.

1. Introduction

Affluent societies are facing economic, social and demographic transitions that shape the development of population health and its distribution across the socioeconomic structure. Large post war baby-boomer generations are currently facing the end of their work career and subsequent transition to retirement (Oeppen and Vaupel, 2002; Christensen et al., 2009). These generations can be expected to live longer than any prior generation. Nevertheless under the long-term restructuring of welfare states equity in health and well-being is challenged. Despite positive overall trends, large socioeconomic inequalities in health persist worldwide (Mackenbach et al., 2008; Mackenbach, 2012).

Comparative and national time trend studies suggest that health inequalities are not only universal across European and non-European populations but that they also have either remained stable or widened over time, with limited evidence of narrowing inequalities (Lahelma et al., 2002; Mackenbach et al., 2003; House et al., 2005; Kunst et al., 2005; Mirowsky and Ross, 2008; Hiyoshi et al., 2013a). The magnitude of health inequalities varies between countries, genders and periods suggesting that these inequalities depend on national contexts and individual characteristics, and are thus likely to be modifiable (Mackenbach, 2012).

Previous comparative studies have been mainly cross-sectional or repeated cross-sections. Few prospective cohort studies following up health inequalities as people grow older in various national contexts are available, limiting our understanding of how health inequalities change over time among ageing men and women in different countries. We seek to address this limitation by following up health inequalities within cohorts from three affluent societies, i.e. Britain, Finland and Japan. These countries share both similarities and dissimilarities and provide opportunities for prospective and comparative studies (Allardt, 1990; Uzuhashi, 2003; Martikainen et al., 2004).

Cross-sectional comparisons have shown inequalities in various health related outcomes among employed men and women from Britain and Finland in the 1990s and 2000s, whereas in Japan these inequalities have been unsystematic or even non-existent, in particular among women (Martikainen et al., 2004; Lahelma et al., 2010; Hiyoshi et al., 2013b). A Japanese study using repeated surveys from 1986 to 2007 found inequalities by income and social class in self-rated health among men and women (Hiyoshi et al., 2013a). These inequalities remained stable or narrowed over time but persisted. Population based follow ups from western Europe and the USA suggest widening health inequalities through adulthood and towards later life (Elstad and Krokstad, 2003; Sacker et al., 2005; Mirowsky and Ross, 2008). There is also some evidence

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from the USA on stability of health inequalities as middle aged people are ageing (Gueorguieva et al., 2009).

In addition to upstream factors like national context and economic situation shaping the magnitude of health inequalities (Sacker et al., 2011; Mackenbach, 2012) little is known about downstream factors that might contribute to changes in health inequalities in ageing cohorts (Pietiläinen et al., 2012). We can assume that downstream factors similar to those that contribute to the existence of health inequalities may also contribute to their changes over time, i.e. socio-demographic factors, social relations, health behaviours and living conditions (van Lenthe et al., 2004; Laaksonen et al., 2005; van Oort et al., 2005; Lahelma et al., 2010; Mackenbach, 2012). The effects of these factors remain to be quantified.

2. Context and purpose

Our purpose was to extend the previous cross-sectional comparisons and cohort specific follow ups to analyses following up the magnitude of relative inequalities in physical health functioning in three comparable cohorts, the British Whitehall II study, the Finnish Helsinki Health Study and the Japanese Civil Servants Study. These cohorts include public sector employees, both men and women, approaching transition from working age to retirement, who have been followed up over an average of 3.6 to 6.5 years in 1997–2007. Our study is novel in examining health inequalities in three comparable occupational cohorts and using a follow up design among men and women. There are previous comparative studies as well as some trend studies and follow up studies on health inequalities (Martikainen et al., 2004; House et al., 2005; Kunst et al., 2005; Lahelma et al., 2010; Pietiläinen et al., 2012; Hiyoshi et al., 2013a), but we lack studies that use simultaneously both a comparative and a follow up design and include potential explanatory factors.

In the study of health inequalities over the life course a cumulative disadvantage hypothesis has been put forward, predicting that health inequalities widen over the adult life course as disadvantage accumulates in an unequal way (Pietiläinen et al., 2012). Increasing socioeconomic differences in resources, exposures and risks lead to divergent deterioration of health and functioning in adulthood (Ferraro and Shippee, 2009). A complementary age-as-leveller hypothesis predicts that health inequalities stabilise and narrow towards the end of working age and beyond as socioeconomic differences in risk factors like health behaviours, work exposures and social supports diminish due to gradual biological frailty and retirement (Kim and Durden, 2007). Economic and political circumstances may further shape the developments and harder times are likely to jeopardise people's access to resources and institutional supports pressurising health inequalities to widen (Mackenbach, 2012; Karanikolos et al., 2013).

We expected, first, that relative inequalities in physical health functioning would be seen in the British and the Finnish cohort and that they have either remained stable or widened over time. Second, we expected that health inequalities would also be seen in the Japanese cohort. Third, we expected that in addition to socio-demographic factors, health behaviours and social relations would contribute to the found health inequalities.

Our specific aims were:

(1) To examine changes over an average of 3.6 to 6.5 year follow up in the magnitude of relative occupational social class inequalities in physical health functioning among men and women from British, Finnish and Japanese occupational cohorts.
(2) To examine whether adjustment for socio-demographic factors, social relations and health behaviours affects the studied health inequalities and their changes over time.

3. Data and methods

3.1. Data sources

We used three prospective occupational cohorts, the London based Whitehall II study from Britain, the Helsinki based Helsinki Health Study from Finland, and the western Japan based Japanese Civil Servants Study. The Finnish and the Japanese cohorts largely follow the Whitehall II study protocol. All cohorts are designed for the study of health and its social and occupational determinants among middle aged public sector employees. At baseline and at follow up employees from each cohort were mailed a self-assessed questionnaire. A range of identical measures were used and the data were further harmonised for maximal comparability.

Whitehall II study data were first collected in 1985–1988 among government employees working for the civil service in 20 departments in London at the time of recruitment ($n=10{,}308$, response rate 73%) (Marmot and Brunner, 2005; www.ucl.ac.uk/whitehallII). We used participants employed in the civil service from phase 5 of the study in 1997–1999 (response rate 73%) as our baseline and participants from phase 7 in 2003–2004 as follow up (response rate 76%). White-collar employees aged 45–68 years at baseline were included ($n=4350$, 26% women) (Table 1).

Helsinki Health Study baseline data were collected in 2000–2002 among local government employees aged 40–60 years, working for the City of Helsinki ($n=8960$, response rate 67%) and followed up in 2007 (response rate 83%) (Lahelma et al., 2013;

Table 1
Characteristics of the data in the Whitehall II study, Britain, the Helsinki Health Study, Finland, and the Japanese Civil Servants Study, Japan.

	Britain	Finland	Japan
Method	Mail survey	Mail survey	Mail survey
Participants	Government employees, London	Local government employees, Helsinki	Local government employees, Western Japan
N	4350	6118	3299
Age at baseline	45–68	40–60	35–70
% Women	26	84	33
Baseline	1997–1999	2000–2002	1998–1999
Follow up	2003–2004	2007	2003
Average follow up time	5.1	6.5	3.6
Response rate (%)			
Baseline	73	67	73
Follow up	76	83	76