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Household income and health problems during a period of labour-market change and widening income inequalities – A study among the Finnish population between 1987 and 2007

Akseli Aittomäki [a,*], Pekka Martikainen [b], Ossi Rahkonen [a], Eero Lahelma [a]

[a] University of Helsinki, Department of Public Health, Finland
[b] University of Helsinki, Department of Sociology, Finland

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ABSTRACT

Income inequalities widened considerably from 1987 to 2007 in Finland. We compared the association between household income and health problems across three periods and in several different ways of modelling the dependence. Our aim was to find out whether the change in the distribution of income might have led to wider income-related inequalities in health problems. The data represent an 11-per-cent random sample of the Finnish population, and we restricted the analysed sample to those between 18 and 67 years of age and not in receipt of any pension in each of the three six-year periods examined (n between 280,106 and 291,198). The health outcome was sickness-allowance days compensated. Household-equivalent taxable income was applied with two different scale transformations: firstly, as real income adjusted for price level and secondly, as rank position on the income distribution. We used negative binomial regression models, with and without zero inflation, as well as decomposition analysis. We found that sickness-allowance days decreased with increasing income, while differences in the shape and magnitude of the association were found between the scales and the periods. During the study period the association strengthened considerably at both the lowest fifth and the top fifth of the rank scale, while the observed per-unit effect of real income changed less. Decomposition analysis suggested that slightly less than half of the observed increase in concentration of health problems at lower end of the rank scale could be accounted for by the change in real income distribution. The results indicate that widening differences in household consumption potential may have contributed to an intensified impact of household income on inequalities in health problems. Explaining the change only in terms of consumption potential, however, was problematic, and changes in the interdependence of labour-market advantage and health problems are likely to contribute as well.

Introduction

Given that the economic resources of households, including income, are a frequently discussed potential source of inequality in health, it is of great interest to examine whether, and if so how, the association between household income and health problems changes following a change in the distribution of income among a population. A few previous studies have addressed the potential impact of change in income inequality on health differences by income, with mixed results. Data on the British population imply that an increase in health differences across the 1980s was at least partially attributable to widening income inequality (Gravelle & Sutton, 2003), but contrasting findings were reported in studies among Japanese and Spanish populations (Kachi, Inoue, Nishikitani, Tsurugano, & Yano, 2012; Regidor et al., 2006). Our previous results indicate that the inequality in health problems by household income may have widened among the Finnish population between 1995 and 2007, and in the present paper we examine in more detail the association between 1987 and 2007.

Marked changes occurred in the distribution of income among the Finnish population during the period under study. Income inequalities were particularly low in Finland between 1987 and 1991, and the Gini-coefficient for household disposable income was 0.20 in 1987 (Statistics Finland, 2011a). The unemployment rate was relatively low as well, at 3.1 per-cent (Statistics Finland, 2011b). A deep recession was experienced in Finland between 1991 and 1993, during which time the unemployment rate rose steeply, peaking at

* Corresponding author. Department of Public Health, P.O. Box 41, 00014 University of Helsinki, Finland. Fax: +358 9 191 27570.
E-mail address: akseli.aittomaki@helsinki.fi (A. Aittomäki).

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16.6 in 1994. Largely due to income transfers, however, inequality in household disposable income was only mildly affected during this period, while average disposable income stagnated slightly. In contrast, between 1994 and 2000, improving employment rates parallelled with increasing average income level, but the increase was less marked at the lower end of the income range, while top incomes increased particularly rapidly, resulting in a continuous increase in relative income inequality. Between 2000 and 2007 average income level continued to rise, but the increase was more even throughout the distribution and the change in relative income inequality was less consistent. The Gini-coefficient for disposable income in 2007 was 0.28. The unemployment rate declined more or less continuously after 1994, and was 6.9 per-cent in 2007.

Analytical setting and objectives of the study

Our objective in this study is to test to what degree changes in the distribution of household consumption potential could account for potential changes in health inequality by income. By consumption potential we understand the ability to buy commodities on the market. Our previous results from follow-up data on individuals suggested that household economic resources, including income and wealth, affect subsequent health problems (Aittomäki, Martikainen, Laaksonen, Lahelma, & Rahkonen, 2012), while results less clearly in support of the causal effects of consumption potential are reported in two other studies (Gunasekara, Carter, Liu, Richardson, & Blakely, 2012; Halleröd & Gustafsson, 2011).

Our approach is based on two important distinctions pertaining to income distribution and health inequality. Firstly, our main interest is on real-income difference, and not only on relative income inequality: in income metrics, it is usually accepted that a proportional increase, e.g. of 20 per-cent, in everyone's income does not constitute an increase in income inequality. From our point of view it is relevant, however, that if everyone's real income increases in same proportion, differences in terms of consumption potential increase. If ability to buy goods and the freedom for consumption choice is directly relevant for health, changes in real-income difference could be expected to affect inequalities in health even if relative income inequality, as measured e.g. by the Gini-coefficient, is less affected.

Secondly, it is crucial to distinguish between the observed effect of a set quantity of real income on health problems, and the magnitude of health inequality by income among the population. The latter can be described as the advantage observed in those with better income in terms of difference in health problems between, e.g. persons located at 1st quartile point and 3rd quartile point of the income distribution. On the assumption that differences in household consumption potential are a cause of the income–health–problems association, it is to be expected that health differences between persons located at certain rank positions in the income distribution widen particularly strongly when income inequality widens. This is because real-income difference (i.e. difference in consumption potential) between the same rank positions is widening. Changes in the effect of a set quantity of real income, in contrast, can be expected to be smaller, because the advantage afforded by a set increase in consumption potential is not necessarily, as such, affected by the income distribution.

We report data on the association between real income and health problems, as well as between rank position on the income distribution and health problems. Furthermore, a decomposition analysis is performed in an attempt to estimate to what degree potential change observed in the latter is related to change in real-income difference. To the degree that consumption potential is a significant driver of health inequalities, we expect 1) the change in the association between rank position and health problems to be more marked than that between real income and health problems, and 2) the change in the distribution of income to account for a major part of income-related health-inequality change over time.

Methods

Data source and measurements

The data were derived from the labour-market-participation database of Statistics Finland (ethics committee permission TK 53-576-04), which combines data from several official register sources. The data set used in this study represents an 11-per-cent random sample of the entire Finnish population between 1987 and 2007. The analyses covered three periods, 1987 to 1992, 1994 to 1999 and 2002 to 2007. The health outcome was sickness allowances received. The analysed sample was restricted to those between 18 and 67 years of age and not in receipt of any pension, including disability pension, during the six years of each studied period, because persons not meeting these criteria do not qualify for sickness allowance. After excluding those with missing income data (1%), the analysed samples were 288,361, 280,106 and 291,198 persons for the three periods, respectively. All the original data were annual, except for occupational class, which was obtained from the population register every fifth year.

For each six-year period, data on income as well as on all adjusted factors were derived from the first three years, and the data on sickness allowances from the last three years. Consequently, sickness allowances in 1990–1992 were predicted by income in 1987–1989, allowances in 1997–1999 by income in 1994–1996, and allowances in 2005–2007 by income in 2002–2004. This was done in order to eliminate the short-term dependences of lower income during the time of the compensated sickness period, and temporary exit from the labour market due to acute sickness. We further deleted from the analyses persons with 30 months or more of unemployment during the three years of sickness-allowance measurement.

Sickness allowance is a universal social benefit paid by the Finnish Social Insurance Institution in compensation for medically certified inability to work. Before 1993 the allowance was paid starting on the eighth day of certified sickness, and from 1993 onwards starting on the tenth day. Employment is not required because being an entrepreneur, a job seeker, a full-time student, and doing household work count as working towards receiving the benefit. Employers paying the salary of an employee during the employee's sickness leave are entitled to claim the benefit in the

Table 1
The prevalence of sickness allowance and the average number of sickness-allowance days within three calendar years.

Period of sickness-allowance measurement	Entire sample		Those with allowance	
	Prevalence of any allowance	Average of 3-year total days	Average of 3-year total days	Median of 3-year total days
1990–1992	0.27	12.0	44.1	20
1997–1999	0.21	10.1	45.9	20
2005–2007	0.24	13.5	54.2	24