Social Science & Medicine 75 (2012) 1303–1310

Contents lists available at SciVerse ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Household economic resources, labour-market advantage and health problems – A study on causal relationships using prospective register data

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

[a] University of Helsinki, Department of Public Health, P.O. Box 41, 00014 University of Helsinki, Finland
[b] University of Helsinki, Department of Social Research, Population Research Unit, Finland

ARTICLE INFO

Article history:
Available online 12 June 2012

Keywords:
Finland
Health inequalities
Material affluence
Labour market
Household wealth
Income
Social causation
Social selection

ABSTRACT

Our aim was to find out whether the associations between health and both individual and household economic position reflected a causal effect on health of household affluence and consumption potential. We attempted to separate this effect from health-selection effects, in other words the potential effect of health on economic position, and from various effects related to occupational position and prestige that might correlate with the economic indicators. We made a distinction between individual labour-market advantage and household economic resources in order to reflect these theoretical definitions. Our aim was to test and compare two hypotheses: 1) low household economic resources lead to an increase in health problems later on, and 2) health problems are disadvantageous on the labour market, and consequently decrease the level of economic resources. We used prospective register data obtained from the databases of Statistics Finland and constituting an 11-per-cent random sample of the Finnish population in 1993–2006. Health problems were measured in terms of sickness allowance paid by the Finnish Social Insurance Institution, household economic resources in terms of household-equivalent disposable income and taxable wealth, and labour-market advantage in terms of individual taxable income and months of unemployment. We used structural equation models ($n = 211{,}639$) to examine the hypothesised causal pathways. Low household economic resources predicted future health problems, and health problems predicted future deterioration in labour-market advantage. The effect of economic resources on health problems was somewhat stronger. These results suggest that accumulated exposure to low economic resources leads to increasing health problems, and that this causal mechanism is a more significant source of persistent health inequalities than health problems that bring about a permanent decrease in economic resources.

Background

An interest in whether both individual and household economic resources and consumption potential affect health characterises many studies investigating the association between economic indicators and both morbidity and mortality (Imlach Gunasekara, Carter, & Blakely, 2011; Kawachi, Adler, & Dow, 2010). The 'independent causal effect of income' may well refer to the potential effects of the ability to consume and to acquire ownership on health. Because of methodological limitations, however, few previous studies have provided direct evidence about the causal pathways underlying the association between economic indicators and health outcomes. A major methodological challenge is to distinguish the wider access to goods, services and other conditions that private financial resources facilitate from advantages that derive more directly from involvement in the labour market and the access to occupational hierarchies and prestige. Addressing the possibility that poor health causes economic disadvantage is also crucial.

Many studies on the associations between income as well as other economic indicators and morbidity – mainly self-rated health – are based on cross-sectional data (Aittomäki, Martikainen, Laaksonen, Lahelma, & Rahkonen, 2010; Blane, Bartley, & Davey Smith, 1997; Ecob & Davey Smith, 1999; Fritzell, Nermo, & Lundberg, 2004). In such settings making distinctions between various pathways inevitably rests on the assumption that the studied population has been exposed to the relevant determinants in a strict temporal order, an assumption that usually does not withstand closer scrutiny. Studies on mortality (Backlund, Sorlie, & Johnson, 1996; Martikainen, Valkonen, & Moustgaard, 2009) are not necessarily more informative in terms of untangling the causal order; without repeated measures of both health

* Corresponding author. Tel.: +358 9 191 27548.
E-mail address: akseli.aittomaki@helsinki.fi (A. Aittomäki).

0277-9536/$ – see front matter © 2012 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.socscimed.2012.05.015

and economic indicators it remains uncertain whether adjusting the association between income and mortality for earlier unemployment, for example, removes the contribution of health selection from the observed association, or whether it removes some of the effect of an earlier lack of economic resources.

There have been a number of studies based on repeated questionnaire (Benzeval & Judge, 2001; Contoyannis, Jones, & Rice, 2004; Lynch, Kaplan, & Shema, 1997; Martikainen, Adda, Ferrie, Davey Smith, & Marmot, 2003; McDonough & Berglund, 2003), the results indicating that household income and wealth predict subsequent poor health, even following adjustment for baseline health. However, the remaining association may be attributable to other constituents of social stratification, and there were no attempts to directly quantify the effect of poor health on later economic indicators in these studies. One reason for this could relate to the limitations of the statistical techniques used: regression methods are limited to modelling one dependent variable at a time, which may be problematic when several directions of causation are likely to operate at the same time.

A recent study on a Swedish working-age cohort examined the reciprocal effects of education, occupational prestige, household income and a self-reported morbidity index in a 16-year follow-up (Halleröd & Gustafsson, 2011). There were clear effects between occupational prestige and morbidity in both directions of causation, but not so much between household income and morbidity. Although baseline household income did not predict an increase in morbidity, and baseline morbidity did not predict household-income development, change in both income and morbidity during the follow-up did correlate. Several earlier studies have reported correlations between change in income and change in health (Contoyannis et al., 2004; McDonough & Berglund, 2003; Thiede & Traub, 1997), although in some studies the correlations were very weak (Imlach Gunasekara et al., 2011). It is somewhat unclear whether the aim in these studies was to address the issue of causality in the relationship between economic position and health, or to test whether income fluctuation influenced health in its own right. Modelling change on change may be an inappropriate test for causality because a lot of information on the exposure is wasted. It would appear safe to assume that it is the overall level of economic resources during follow-up that causes the health effects of interest, not only the portion that changes.

Conceptual model

Our interest in economic indicators lies in the possibility of making inferences with regard to whether the economic resources of individuals and households have a causal effect on the development of health problems. This dependence is the focus of our conceptual model (Fig. 1). We assume that economic resources affect living conditions, which we understand as a wide array of social goods that better financial resources make available, including daily consumer goods, access to services and the choice of residential area. These conditions, in turn, may affect the development of health problems. The main alternative explanation is that health problems may affect a person's ability to secure gainful employment, and sometimes also his or her career development. This may result in income loss and the depletion of economic resources, thereby narrowing consumption choice and affecting living conditions.

If we make a clear distinction between household economic resources and the individual's advantage on the labour market and in working life, we might plausibly assume that health problems do not affect household resources directly, and that the potential effect should be transmitted through the individual's advantage. The relationship between labour-market advantage and health problems is less clear with respect to the direction of the causation: the former could also be hypothesised to affect the latter. Furthermore, labour-market advantage is closely related to work conditions. Thus, in order to reduce the possibility of confounding from the potential causal effects of work conditions, the observed effects in both causal directions need to be considered.

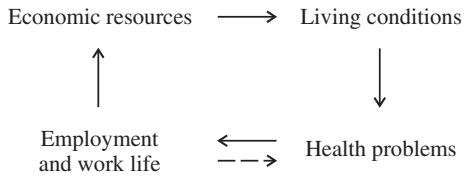

Fig. 1. The conceptual model.

Objectives

Our aim was to find out if economic resources affect subsequent health problems, and if health problems affect labour-market advantage. We attempted to estimate the relative contributions of these two mechanisms to the dependence between health problems and the economic circumstances of households and individuals. We made a distinction between individual advantage and household resources, assuming that the latter was related to consumption potential, given the tendency to share a large proportion of the economic resources within a household. This distinction, we assume, will help to disentangle the effects related to economic resources as a way to secure better living conditions, and to reduce the confounding effects occupational prestige, for example. We used a large representative data set with 14 repeated measurements for the relevant social indicators, as well as for health problems.

Methods

Data source

With the approval of Statistics Finland, (ethics committee permission TK 53-576-04) we used the labour-market participation database of Statistics Finland, combined from several different official register sources. The data used for this study represented an 11-per-cent random sample of the entire population residing in Finland at any point from 1993 to 2006. For the structural equation modelling we used complete data that only pertained to persons in the population in each study year. We excluded individuals receiving any pension, including disability pension, starting at any point during the study period, and those under 17 years of age at the beginning or above 67 years of age at the end of the study period, because the measure of health problems we used does not cover these groups. Of the 296,917 persons born between 1938 and 1976 in the sample in 1993, 7183 (2%) emigrated, 12,122 (4%) died and 51,517 (17%) retired, 20,834 of them on disability grounds, during the study period. Furthermore, 14,456 (5%) we excluded on account of missing data concerning any of the variables of interest in any year. Consequently, the causal dependences of interest were tested in a cohort of 211,639 persons followed-up for the full 13 years. Inclusion in the descriptive regression models was based on the eligibility criteria applied to shorter periods of three or four years, and thus these models represent somewhat larger populations (n from 285,459 to 294,187, depending on the period in question).

The measure of health problems

We used the number of days on which sickness-allowance was paid during one calendar year as the measure of health problems.