findings

From The Health Variations Programme

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

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Income dynamics and health inequalities: an analysis of cohort and panel data

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The Health Variations Programme is a research programme set up to improve understanding of the causes of socio-economic inequalities in health. It is funded by the Economic and Social Research Council, the major funder of social science research in the UK, and runs from 1996 to 2001. It consists of projects based in research centres and university departments across the country, linked both to each other and to research users in the policy and practice communities.

- Numerous studies have shown that poverty or low income is associated with poor health. However, the evidence does not take sufficient account of the accumulated effect of income across the lifecourse or the impact of income dynamics.

- This study attempts to overcome these problems by using two longitudinal datasets - the National Child Development Study (NCDS) and the British Household Panel Survey (BHPS) - to investigate the role of income across the lifecourse as a determinant of adult health.

- The literature suggests that an individual's health and education as they make the transition from childhood to adulthood are vital for a range of adult outcomes including health. Evidence from both the NCDS and BHPS confirms that health and education are very significant determinants of adult health.

- Analysis of the NCDS shows that persistent financial difficulties in childhood are associated with both poor educational attainment and health problems.

- Closer investigation of recent income dynamics over 6 years in adulthood in the BHPS shows that these are also significantly associated with health. For example, persistent poverty in adulthood is more harmful for health than occasional episodes of poverty.

- This study shows the enduring importance of childhood poverty for health and education and the additional health-damaging effects of low income in adulthood. These findings suggest policies to reduce poverty, especially among families with children, are important components of any strategy to tackle health inequalities.

- New Labour has focused on paid work as the key route out poverty for most people. They have introduced a range of welfare-to-work schemes, a national minimum wage, educational reforms, a childcare strategy and changes to the tax and benefit system to increase in-work incomes.

- In doing this, the government has prioritised families with children living in poverty, with successive budgets redistributing resources towards families in the bottom of the income distribution.

- However, although all of these changes are useful steps in the right direction, the impact that they are likely to have on the number of people living in poverty and the levels of unemployment is modest.

- In addition, some groups - such as single people and couples without children - have lost out, and their health may be adversely affected as a result.

Background

It is a truism that poverty is bad for health. However, the precise links between the different dimensions of poor financial circumstances and different measures of health status are not clearly understood. Moreover, much of the evidence about the association between income and health is based on cross-sectional data where the direction of causation cannot be known with any certainty. It may be that health selection is taking place, i.e. poor health results in low income, rather than low income causing poor health. In addition, recent research findings make it increasingly clear that poverty is a dynamic not a static concept and that it is the accumulated effect of socio-economic circumstances across childhood and adulthood that is important for health.

The overall objective of this project, therefore, has been to investigate the relationship between income and health over time both to shed more light on the issue of causation and to take account of income dynamics. It explores the association between income levels and fluctuations and a range of health outcomes. To guide the investigation we have developed a conceptual framework (Figure 1) that focuses on the role that income in childhood and adulthood plays in shaping health both directly and indirectly through important mediators such as educational attainment.

Across the lifecourse, an individual has certain characteristics that are fixed - such as genetic makeup, age and sex - which may also affect their health and socio-economic status.

In childhood, we are particularly interested in the effect of the financial resources available to households on the development of health and educational capital, although other childhood circumstances are also likely to be important factors.

Two dimensions of an individual's transition to adulthood - "income potential" and "health capital" - are of particular relevance to the project. Income potential is the accumulation of abilities, skills and educational experiences in childhood, which are key determinants of adult employability and income capacity. Health capital is the accumulation of health resources during childhood, both physical and psycho-social, which determine future health status.

In adulthood, an individual's living standards, health-related behaviours and social networks are determined partly by their accumulated lifecourse experience and partly by the social roles - in terms of marital status, employment and parenthood - that they assume. All of these factors are likely to influence final health outcomes.

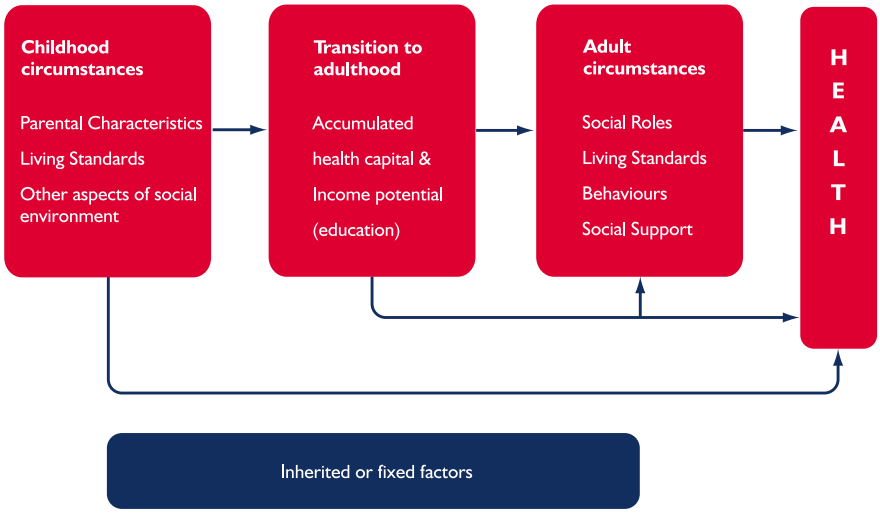
The conceptual framework provides a theoretical structure within which to explore issues about the direction of causation and to investigate the complex inter-relations between income and health. Below we highlight some of the key findings from this project. More detailed discussions of the results can be found in the publications listed on page 4.

Data and methods

There is no single dataset that covers the breadth of information or length of lifecourse necessary to address all of the potentially important aspects of the relationship between income and health. We have therefore had to adopt a modified approach that reflects the characteristics of the datasets that can be used.

- The NCDS is employed to investigate the role of financial circumstances in childhood as a determinant of health capital and educational outcomes. It contains information on a cohort of people born during one week in March 1958. Information is available about family circumstances at birth and when the respondents were aged 7, 11, 16, 23 and 33.
- The BHPS is employed to explore the associations between recent income and health in adulthood, having controlled for the accumulated risks in the individual's lifecourse up to the point in time when it started to collect data from respondents. The BHPS is an annual household panel study, which was begun in 1991 and the analysis for this study is based on six years of data.

Figure 1: Income and health: a lifecourse perspective



Results

Our analysis of the BHPS and the NCDS focused on four key questions.

- What role do financial circumstances in childhood play in shaping educational outcomes and the acquisition of health capital?
- What contribution do education and health capital make to adult health?
- What role does recent experience of income play in determining adult health?
- How much of the association between income and health can be explained by health selection?

What role do financial circumstances in childhood play in shaping educational outcomes and the acquisition of health capital?

Analysis of the NCDS showed that persistent financial difficulties in childhood had a significant effect on both educational attainment and health outcomes at the age of 23. Similarly there was an association between permanent parental income and these outcome measures. However, the strength of these associations was reduced when other childhood factors, in particular parental education, were added to the models. Even so, the association between income and educational attainment remained significant.

What contribution do education and health capital make to adult health?

Analysis of both the NCDS and the BHPS suggested that education and health capital are key determinants of adult health outcomes. This was true across a range of health measures and population groups. However, while for men and women of working age the contribution of education and health as determinants of income was similar, for people over retirement age the role of education was minimal.

What role does recent experience of income play in determining adult health after having taken account of accumulated human capital and risk?

Having controlled for education, health capital and fixed factors, analysis of the BHPS showed that there were significant associations between recent family income and health.

More detailed investigation of the association between recent income and health in adulthood showed that:

- persistent poverty was more harmful for health than occasional episodes of poverty;
- long term income appeared to have a stronger association with health than income measured at a single point in time;
- having controlled for income levels, recent income change also appears to influence adult health.

How much of the association between income and health can be explained by health selection?

We employed a range of different methods to investigate the possibility of reverse causation, the two most important of which were using measures of income which precede the measurement of health and including initial health in models of health outcomes. Within both the NCDS and the BHPS we found that there was still a strong association between family income and health when the income measure preceded the health outcome. Including initial health in the models did reduce the coefficient on the income variables, suggesting that health selection does play a part in the relationship, but it did not account for all of the association. For all of the health measures examined, individuals in lower income groups or those who experienced more financial difficulties had poorer health than those respondents who were more affluent.

Policy implications and critique

The analysis in this project has shown the enduring importance of childhood poverty for health capital and educational attainment, and the additional health-damaging consequences of low income in adulthood. The results suggest that practical policies to reduce poverty, especially for families with children, should be an essential ingredient in any concerted effort to tackle health inequalities. However, as the above summary highlights, the statistical importance of the poverty variables was reduced when other measures, such as education, employment and parent's characteristics, were introduced into the models. This suggests that other policy developments, particularly to promote employment and educational opportunities, are also required.

New Labour's policies to improve living standards suggest that these kinds of analyses have been taken into account and that new initiatives are intended to tackle the *causes* of poverty not just alleviate the *symptoms.* The government has introduced a range of policies to reduce barriers to employment, such as the National Childcare Strategy and Employment Action Zones. Their single biggest investment is on a range of New Deal initiatives to promote employment for a number of different groups. In addition the government's has established a number of measures to 'make work pay'. These include the introduction of a national minimum wage, increasing benefits for low paid workers with families, introducing a new 10p income tax rate and reforming the National Insurance system.

In relation to education, the government has introduced a raft of strategies and reforms to promote literacy and numeracy, reduce school exclusions and truancies, and give children a better start in life. Finally, successive budgets have redistributed income towards families with children, especially those at the bottom of the income distribution.

As such, the main thrust of the government's anti-poverty strategy has two distinct elements. First, it emphasises the central role of paid work as the best route out of poverty and, secondly, it prioritises families with children. Our analysis suggests that both of these are important parts of any strategy to reduce health inequalities. However, although the government has promoted policies to meet these objectives, to date they have only had modest effects and are unlikely to make a major impact on the levels of poverty or unemployment in Britain in the foreseeable future. Moreover, some key groups are excluded from the government's anti poverty strategy. In particular, single people and couples without children have, on average, experienced reductions in their real living standards. This is likely to adversely affect their health.

This project was funded under the ESRC Health Variations Programme from April 1997 until June 1999. It was based on a collaboration between Michaela Benzeval, now at Queen Mary and Westfield College, London University, Ken Judge, now at PSSRU University of Kent, both of whom were previously based at the King's Fund Institute and Jayne Taylor, Costas Meghir and Andrew Dilnot at the Institute of Fiscal Studies, and Paul Johnson, now at the Financial Services Authority.

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Selected papers drawn on for these Findings

Benzeval, M and Judge, K, 'Income and health: the time dimension', (in press) *Social Science and Medicine.*

Benzeval, M., Judge, K., Johnson, P. and Taylor, J. (forthcoming), 'Relationships between health, income and poverty over time: an analysis using BHPS and NCDS data', in J. Bradshaw and R. Sainsbury (eds), *Experiencing Poverty: Vol. 3 of the Proceedings of the conference to mark the centenary of Seebohm Rowntree's first study of poverty in York,* Ashgate, Aldershot.

Benzeval, M., Dilnot, A., Judge, K. and Taylor, J. 'Income and health over the lifecourse: evidence and policy implications' in H. Graham (ed) *Understanding health inequalities,* Open University Press, Milton Keynes (in press - to be published 2000).

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Meghir, C. and Taylor, J. (1999) 'Parental investments and adult health outcomes' Proceedings of the *Eighth European Workshop on Econometrics and Health Economics* University of Catania, Italy.

Information about Programme

The Health Variations Programme was established by the Economic and Social Research Council in 1996 to focus on the causes of health inequalities in Britain. Over the last two decades, Britain has got healthier and richer, but inequalities in health and income have increased. Death rates have fallen but mortality differences between social class I and V have widened; real incomes have risen but so has the proportion of the population living in poverty. The Programme aims to:

- advance understanding of the social processes which underlie and mediate socio-economic inequalities in health;
- advance the methodology of health inequalities research;
- contribute to the development of policy and practice to reduce the health gap between socio-economic groups.

There are 26 projects in the Programme, based in university departments and research units across the UK. The projects have been established in two phases: in 1996/7 and in 1998/9. They address questions at the cutting-edge of health inequalities research, including the influence of material and psycho-social factors across the lifecourse, the influence of gender and ethnicity and whether and how areas have an effect on the socio-economic gradient over and above the influence of individual socio-economic status. The potential contribution of policy, at national and local level, is also addressed.

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