RESEARCH REPORT

Changes in income in the years before death: a record linkage study in Stockholm County

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A high proportion of lifetime healthcare spending occurs in the last year of life, perhaps as much as one third.¹ For the individual, the costs of coping with illness and accessing healthcare are also likely to be high, at a time when their earnings may have fallen because of sickness. Evidence is available for both downward social mobility after the onset of illness, and the impoverishment of bereaved partners.^{2,3} Changes in financial circumstances leading up to death have seldom been explored in health-related research, despite this being a crucial time for welfare interventions, many of which are either means-tested or attract fees. In this study, we investigated absolute and relative movement in income in the 3 years leading up to death in Sweden.

PARTICIPANTS, METHODS AND RESULTS

Data were analysed from the linked population registers in Stockholm County (population 1.8 million) for all deaths in 2002. Net household income after all taxes and transfers was equivalised using the Statistics Sweden scale and placed into one of 20 income bands for the whole population (equivalising income refers to the process of adjusting income to take into account the size and composition of the household). Each individual was then classified by how many income groups they had moved, from 1998 (3 years before death) to 2001 (the year before death). These were compared with the changes in income in the whole population over the same time period. Decedents were excluded from the analysis if they had had no contact with any health services in the last 3 years of life, as they were more likely to have died suddenly. Ethical permission for the study was granted by the regional ethics committee in Stockholm.

High-quality income data from tax registers were available for 14 221 of the 16 617 adults who died in Stockholm County in 2002. All income groups had an increase in equivalised annual household income over the last 3 years of life, although changes were small, ranging from a median of 5020 (interquartile range 2197–16 081) Swedish kroner (US\$ 690) in the four lowest-income groups to median 758 kroner (interquartile range 43 699–26 355; US\$ 104) in the four highest-income groups. The median percentage change in income among all decedents was 4.8%, while median equivalised household income rose by 8% in the Swedish population as a whole, and between 0% and 3% in those aged >65 years over the same time period (depending on age and household composition).⁴

Overall, 10 240 people moved into a lower-income group in the 3 years before they died, 1942 stayed in the same group and 2039 moved into a higher-income group. The median number of groups moved by individuals was one. The histogram (fig 2) illustrates the range of movement across population income groups in the 3 years before death).

Figure 1A shows the mean percentage change in income over 3 years before death, for the 12 182 people who either stayed in the same income group, or moved down. People who were at

the two extremes of the income scale at baseline had the largest percentage decreases in income. Figure 1B gives a different picture among the 2039 people who moved up income groups. Here, the incomes of the poorest people at baseline rose by 300%.

DISCUSSION

Income changes expressed in absolute and relative terms tell different stories. All groups experienced small increases in household income in absolute terms in the 3 years before death, compatible with increasing age and inflation. In relative terms, however, the greatest changes in income were experienced by the poorest groups, who had both the highest percentage increases and decreases in income of all the decedents. As the poorest are least likely to have accumulated savings and insurance, some of the increases in their absolute incomes are likely to be due to supportive Swedish social welfare policies.

Protection against the financial effects of illness is a core aim of income maintenance policies in most welfare states.⁵ Although Sweden has narrow income gaps and a comprehensive welfare system compared with many other European countries, the value of this analysis is in identifying the sections of society that are most vulnerable to such fiscal and welfare policies at the end of life.

From this analysis, Sweden generally appears to support people well at the end of life, although there is evidence of some relative impoverishment at this time. It is important for policy makers, not only in Sweden but also in other welfare states, to investigate whether the financial consequences of death and dying vary with socioeconomic position, and if so, whether equity has been neglected.

Figure 1 Mean (%) change in income over the last 3 years of life for decedents in Stockholm County 2002. Error bars represent 95% confidence intervals. Income range from 1 (lowest) to 20 (highest). (A) Decedents whose income did not increase relative to their peers. (B) Decedents whose income increased, relative to their peers, in the last 3 years of life.

Figure 2 Movement across income groups in the 3 years before death. Income groups range from 1 (lowest) to 20 (highest).

What is already known

- Evidence is available for downward social mobility after the onset of illness in the UK and USA, and the impoverishment of bereaved partners, but changes in financial circumstances of people leading up to a death have seldom been explored in health-related research.

What this paper adds

- Most Swedish decedents had stable incomes in the 3 years before they died. People from the lowest income groups in Stockholm County experienced the greatest changes in income, with both the greatest percentage falls and increases in income. Swedish welfare policies appear to support some people well at the end of life, but the effect of relative impoverishment of people on the lowest incomes merits further investigation. Other countries should investigate how supportive their welfare states are for people at the end of life.

Policy implications

- It is important to monitor the differential effect of welfare support at the end of life across socioeconomic groups.

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