
SIR—In most western societies, socioeconomic position operates as a powerful discriminator of health status and risk of premature mortality [1]. This pattern is visible throughout the life course from young people to the oldest old [2–9].

Self-rated health (SRH) has often been used in studies on health inequalities [1, 10], and it is recommended as a health measure by the WHO [11]. Associations of poor SRH with morbidity and mortality are well established among people with different ages. The associations have been shown to be maintained even when other health measures such as cardiovascular disease (CVD), diabetes, cancer and functional capacity are controlled [12–14].

Although studies of SRH among older people have gained prominence in recent years, the results lack coherence [9, 15–18]. Studies concerning cohort changes in SRH have found both improved and deteriorated levels among older people [19]. A recent study from the US suggested a stable or a slightly improved level of SRH among older people from the early 1990s onwards [20]. Results from Sweden indicated stable figures of SRH among older people [9].

There has been a strong impetus for strategies to prevent CVDs in Finland [21]. In fact CVD mortality in Finland has declined considerably since 1970s.

Results from Sweden have indicated some of the CVDs to be increased from the 1980s to the early 2000s among older population aged 65–84 years [22]. CVDs have also been found to be associated inversely with several indicators of SES, including education [23].

Reducing socioeconomic health inequalities has been a central goal in national public health programmes in several countries, including Finland [24], since the 1980s. Even though positive changes in health and functional ability have been found in many countries, health disparities have been either stable or slightly increasing among those of working age [25]. Less is known, however, about the trends of health inequalities among older people. A study from Sweden showed no changes in socioeconomic disparities in SRH among older people between the early 1990s and 2000s [9]. A study from the UK suggested an inverse wealth gradient in the onset of poor SRH among older people. This gradient prevailed up to the age of 75. The wealth gradient diminished among people aged 75 and over [26].

Among people of working age, several alternative measures of socioeconomic position have been used, such as education, occupational social class, income and housing tenure. The most often used socioeconomic measures among older people have been fewer, including education and previous occupation [3, 7, 16, 27, 28].

There are no studies on trends of SRH or CVD inequalities among older people from the early 1990s in Finland, and only a few studies have been conducted elsewhere. To contribute to this important area of research, the aim of this...
Table 1. Odds ratios with 95% confidence interval among men and women for poor self-rated health (SRH) and cardiovascular diseases (CVD), non-adjusted and adjusted figures

<table>
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<th>Men poor SRH</th>
<th>Non-adjusted</th>
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<td><strong>Education (years)</strong></td>
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<td>9+ years</td>
<td>0.37 (0.32–0.44)</td>
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<td>1997–1999</td>
<td>0.89 (0.75–1.06)</td>
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<td>2001–2003</td>
<td>0.72 (0.60–0.85)</td>
<td>0.81 (0.67–0.97)</td>
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<td><strong>CVD</strong></td>
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<td>9+ years</td>
<td>0.67 (0.61–0.78)</td>
<td>0.75 (0.66–0.85)</td>
<td>0.81 (0.71–0.93)</td>
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<td>1997–1999</td>
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<td>2001–2003</td>
<td>0.74 (0.65–0.84)</td>
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<td><strong>Women poor SRH</strong></td>
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<td>9+ years</td>
<td>0.30 (0.25–0.36)</td>
<td>0.37 (0.31–0.44)</td>
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<td>2001–2003</td>
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<td><strong>CVD</strong></td>
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<td>9+ years</td>
<td>0.51 (0.45–0.58)</td>
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The study was (i) to examine the overall trend of SRH and CVD among older men and women and (ii) to analyse changes over time in the patterning of SRH and CVD by education from 1993 to 2003.

Data and methods

Subjects and data collection

The data for this study consisted of six consecutive cross-sectional national surveys from Finland conducted biennially from 1993 to 2003 [29]. Stratified random samples of 300 men and women in each of the 5-year age groups in the age range 65–84, respectively, were drawn from the population register yielding a total target sample of 2,400 persons (1,200 men and 1,200 women). Stratification was used to receive sufficient amount of respondents from the two oldest 5-year age groups. The total number of 65- to 84-year-old respondents in 1993–2003 was 11,486 persons (5,740 men and 5,746 women). The response rate averaged 80% and it remained stable during the study years.

Measures

SRH was elicited by a question asking the respondent to describe his/her current general health as ‘good’, ‘rather good’, ‘average’, ‘rather poor’ or ‘poor’. We combined the categories ‘rather poor’ or ‘poor’ to yield a measure of poor SRH used in the study. Up to date, evidence shows that half of those respondents reporting their health as average or fair also report a limiting long-term illness [30]. In our data, 33% of those reporting their health as average had a CVD. Corresponding figure for those with good health was around 10%. Therefore, in logistic regression analyses, we pooled out the average category to combine dichotomous variable as good (good and rather good) or poor (poor and rather poor) SRH.

Based on a question: ‘In the past year, have you been diagnosed with or treated for the following illnesses by a physician’, a dichotomous variable was constructed to indicate if the respondent had a CVD (myocardial infarction, angina pectoris/coronary disease, heart failure). CVD variable was dichotomised as $0 = \text{no CVD present}$ and $1 = \text{one or more CVD present}$.

Participants were divided into four 5-year age groups. The level of education was used as an indicator of socioeconomic position. Information on education was based on the question: ‘How many years in all have you attended school or studied full time? Elementary school is included’. The lower educational group comprised of those who had studied for less than 9 years (primary education), and higher group included those who had studied for 9 years or more (secondary education or more). The proportion of male respondents in higher group was 20% in 1993–95, 25% in 1997–99 and 32% in 2001–03. Corresponding figures for females were 22%, 28% and 37%.

Statistical methods

Because some demographic categories in the biennial data sets have a small number of observations, surveys were grouped into three distinct time periods: 1993–95, 1997–99 and 2001–03. Age was standardised to the general population of Finland for each time period. A logistic regression model was computed to evaluate differences in SRH and
CVD between age and educational groups and time periods. Variables were entered into the model in the following order: age, education and time period. Age group results were excluded from the table and they were quoted only in the text. In addition, the interaction between the study period and education was separately included in the main effect model to assess continuity/discontinuity of the educational categories across time. Analyses were performed with the SPSS 17.0 statistical programme.

Results

Trends in poor SRH and CVD among men and women by education are shown in Figure 1. Poor SRH and incidence of CVD attenuated slightly over time in both educational groups among men and women Educational differences in poor SRH and incidence of CVD persisted over time among men and women (Figure 1)—the lower the education, the poorer the SRH and the higher the incidence of CVD. According to the interaction test, slight changes in the educational disparities in SRH and CVD between study periods were not statistically significant.

Not surprisingly, older respondents had clearly a higher level of poor SRH and CVD when compared to the younger ones (data not shown). Comparing to the lower educated persons, higher educated men and women had clearly lower odds ratios of poor SRH and CVD, although age and time period were adjusted (Table 1). Non-adjusted and adjusted figures showed the decreasing level of poor SRH and incidence of CVD for both men and women from the early 1990s to the early 2000s.

Discussion

The findings of this study revealed decreasing figures of poor SRH and CVD from the early 1990s to the early 2000s. Approximately, the same level of poor SRH and incidence of CVD was observed both in men and women. Educational disparities remained marked—lower educated having a higher level of poor SRH and CVD.

The high response rate indicated good external validity of this biennially collected nationwide, cross-sectional follow-up data—excluding those permanently institutionalised persons without home address. We can assume the trend results were not markedly biased; however, taking the population of Finland aged 65 and above as a whole, these results are likely to underestimate the true population prevalence of self-reported poor health because of the exclusion of those being resident in institutions.

Although education is a powerful predictor of health, it has limitations as well. For example, measuring the number of years of education neglects both its quality and the attainment of qualification during education [31]. White and colleagues showed educational attainment to be strongly predictive of self-assessed health, although they restricted the analysis to those aged 22–69 [32]. In spite of the lack of knowledge on quality of education, clear inequalities in health are observed.
Research letters

in many countries by using education as a measure of socio-economic position.

Our results are partly in line with those from the US indicating stable or slightly improving figures of SRH from the early 1990s to the early 2000s [20] but incongruent to those from Sweden showing no changes over the same time period [9]. Furthermore, results concerning decreasing incidence of CVD is not in line with results from Sweden [22]. On the other hand, decreasing level of CVD supports the fact that CVD mortality in Finland has decreased considerably over time [21]. More studies are needed to clarify how SRH and incidence of CVD are developing in developed countries in the coming years as the discrepant results so far might result from different methods or differences in SRH and CVD development or both.

Even though poor SRH and incidence of CVD decreased slightly in both educational groups over time, a substantially higher prevalence persisted among those completing only primary education. This is in line with previous results [9, 23]. Similar health inequality findings regarding disparities in the functional disabilities by education have been reported among the same respondents as in the present study [7].

This study adds to the information of a globally very limited number of nationally representative trend studies on SRH and CVDs and their educational differences. The results are significant from the health promotion point of view—showing a great need for tailored measures for the lower educated [33]—but they also provide a basis for evaluating whether the increased educational level of the senior population will bring about a change in the future or not.

Key points

- The findings of this study revealed decreasing figures of poor SRH and incidence of CVDs.
- Approximately, the same level of poor SRH and CVDs were observed both in men and women.
- Educational disparities remained marked—lower educated having a higher level of poor SRH and CVDs.

Conflicts of interest

There are no conflicts of interest to declare.

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References

Research letters

The place of death in Parkinson's disease

SIR—In 2006, The National Institute for Health and Clinical Excellence (NICE) [1] recognised that patients’ with Parkinson’s disease (PD) have palliative care needs throughout their disease trajectory—needs which have been quantified in recent studies [2, 3]. It is now well established that the goal of reducing inequity and providing palliative care to patients with non-malignant conditions should be on a basis of need rather than diagnosis [4].

The National Health Service (NHS) End of Life Care (EOL) Programme (2004–07) [5] aimed to improve quality of care at the end of life for all patients and to enable more patients to live and die in the place of their choice. The proposed outcomes included:

- Greater choice for all patients in their place of care and place of death.
- Decreased numbers of emergency admissions for patients who would prefer to die at home.
- Decreased numbers of patients transferred from a care home to hospital in the last week of life.
- Generalists skilled in the use of care models to improve end of life care.

The End of Life Care Strategy (July 2008) [6] further established the implementation of the above outcomes. The strategy provided a framework on which local health and social care services can plan and coordinate care for all patients. It importantly highlighted a commitment at governmental level to enhance funding for EOL care services.

To date, no previous study has identified where patients with PD die. This information is vital in terms of signposting and informing optimal palliative care service provision, patient choice and advance care planning.

With recent national policy development and service planning in mind, the aim of this study was to identify the place of death in patients with idiopathic Parkinson’s disease (IPD).

Methods

Ethical approval was obtained from the NHS National Research Ethics Service (Gateshead and South Tyneside Local Research Ethics Committee) in April 2007.

Patients under the care of the Northumbria Parkinson’s Disease Service (NPDS) in the North Tyneside area, who died between 1 January 1999 and 1 January 2007, were identified from service records. Patients within the NPDS are followed up life long.

Inclusion criteria

Information on the database and in the medical notes was clarified in order to categorise the patients into those with idiopathic disease, as defined by the United Kingdom Parkinson’s Disease Society Brain Bank Clinical Diagnostic Criteria (UK Brain Bank Criteria) and those with other forms