



Educational differences in disability-free life expectancy: a comparative study of long-standing activity limitation in eight European countries



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ARTICLE INFO

Article history:

Available online 25 June 2013

Keywords:

Europe
Educational differences
Disability-free life expectancy
Long-standing activity limitation
Sullivan's method
Census-linked mortality data
EU-SILC survey data

ABSTRACT

Healthy life expectancy is a composite measure of length and quality of life and an important indicator of health in aging populations. There are few cross-country comparisons of socioeconomic differences in healthy life expectancy. Most of the existing comparisons focus on Western Europe and the United States, often relying on older data. To address these deficiencies, we estimated educational differences in disability-free life expectancy for eight countries from all parts of Europe in the early 2000s. Long-standing severe disability was measured as a Global Activity Limitation Indicator (GALI) derived from the European Union Statistics on Income and Living Conditions (EU-SILC) survey. Census-linked mortality data were collected by a recent project comparing health inequalities between European countries (the EURO-GBD-SE project). We calculated sex-specific educational differences in disability-free life expectancy between the ages of 30 and 79 years using the Sullivan method. The lowest disability-free life expectancy was found among Lithuanian men and women (33.1 and 39.1 years, respectively) and the highest among Italian men and women (42.8 and 44.4 years, respectively). Life expectancy and disability-free life expectancy were directly related to the level of education, but the educational differences were much greater in the latter in all countries. The difference in the disability-free life expectancy between those with a primary or lower secondary education and those with a tertiary education was over 10 years for males in Lithuania and approximately 7 years for males in Austria, Finland and France, as well as for females in Lithuania. The difference was smallest in Italy (4 and 2 years among men and women, respectively). Highly educated Europeans can expect to live longer and spend more years in better health than those with lower education. The size of the educational difference in disability-free life expectancy varies significantly between countries. The smallest and largest differences appear to be in Southern Europe and in Eastern and Northern Europe, respectively.

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Introduction

The decreasing mortality and increasing life expectancy in most Western European countries during the last decades are well documented (Eurostat, 2009). This finding does not in itself mean that the population is healthier. In addition to the length of the

lifespan, more recent research and policy interest are concerned with how many years of life are lived with and without morbidity, functional disability or activity limitations. Ageing populations pose a challenge to the sustainability of the social protection system, and people with functional limitations and chronic conditions specifically account for a significant amount of health care spending (Alexih, Shen, Chan, Taylor, & the Lewin Group, 2010). A key issue is whether the increased life expectancy is associated with an increase or decrease in disability (Fries, 1983). These processes are frequently measured in terms of healthy life expectancy, which

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combines mortality and morbidity rates into a summary measure of population health that describes both the quantity and quality of life (Robine, Jagger, Mathers, Crimmins, & Suzman, 2003).

Not all populations or population sub-groups uniformly enjoy a clear increase in longevity. The difference in life expectancy between Western and Eastern European countries remains significant (Karanikolos, Leon, Smith, & McKee, 2012; Meslé, 2004). Socio-economic differences in health and mortality have been well documented; individuals with lower education have higher mortality (Mackenbach et al., 2008) and shorter life expectancy (Majer, Nusselder, Mackenbach, & Kunst, 2011). A majority of studies suggest that these inequalities have increased (Mackenbach et al., 2003; Shkolnikov et al., 2012). The socioeconomic differences in healthy life expectancy have been studied to some extent. Using Finnish data, Valkonen, Sihvonen, and Lahelma (1997) found that healthy life expectancy depends strongly on the indicators used to measure morbidity, such as a limiting long-standing illness, functional disability and poor self-perceived health, but the patterns of differences between the socioeconomic categories were largely independent of the indicators. Crimmins and Cambois (2003) conducted a comprehensive review of the articles published in the 1980s and 1990s, consistently concluding that in general, the differences by socioeconomic indicators in healthy life expectancy are larger than the differences in life expectancy regardless of the socioeconomic or health outcome indicator used. To the best of our knowledge, there have been no corresponding reviews published since that time, and the most recent developments in healthy life expectancies remain unknown.

Cross-country comparisons of the socioeconomic differences in healthy life expectancy are still less common, and most include a limited number of countries or are restricted to one region. According to Sihvonen, Kunst, Lahelma, Valkonen, and Mackenbach (1998) the size of the socioeconomic differences in healthy life expectancy was at the same level in Finland and Norway in the late 1980s. This similarity obscures the fact that the size of the inequalities was larger in mortality in Finland and in morbidity in Norway. Majer et al. (2011) compared the educational differences in healthy life expectancy between ages 50 and 65 years in ten Western European countries in the latter years of the 1990s. Higher-educated persons lived longer in good health in all countries, but the longest disability-free life expectancy was in Spain. The largest absolute inequalities between the educational groups were in Portugal and France. Despite these studies, there are still many countries in Europe, such as Lithuania, with no previously reported information on the socioeconomic differences in healthy life expectancy. Some countries such as Italy may have information on socioeconomic differences in healthy life expectancy, but the data are limited to older age groups (those of retirement age).

In the calculation of healthy life expectancy, some studies have used activity limitation-based measures as the health indicator. According to the WHO's International Classification of Functioning, Disability and Health (ICF), health and disability are seen in relation to a person's ability to be active and to participate in a society. Activity limitations are difficulties encountered by an individual in executing tasks or actions in everyday life (World Health Organization, 2001). Activity limitation can thus be seen as involving not only specific diseases or the basic physical functioning required for daily living, such as bathing, dressing and walking, but also activities of an individual's level in society (Robine et al., 2003). Activity limitation generally relates to the inability to care for one's own needs independently (Hagedorn, 2008). Studies on the socioeconomic differences in activity limitation are limited, but they suggest that there are social inequalities in activity limitations in several Western European countries and the United States (Majer et al., 2011; Molla, Madans, & Wagener, 2004).

It is a challenge to attempt to form a coherent picture of the recent levels of socioeconomic inequalities in healthy life expectancy because typically, the results from previous studies are based on various data sets using different health outcomes and socioeconomic indicators and they involve different age ranges. In particular, cross-country comparisons with more recent data are lacking entirely. It is rare to have data that cover several countries, that supply harmonized information on socioeconomic status and that include measurements on disability. To address these deficits in the research, this study includes eight countries from throughout Europe, covers a broad age group of 30–79 years, uses a global and evaluated health outcome, namely the Global Activity Limitation Indicator (GALI), and utilizes comparable and harmonized mortality data from the 2000s to study educational inequalities in healthy life expectancies.

Methods

Data

Two types of data are needed to calculate healthy life expectancies, one providing mortality rates for sex- and age-groups and one supplying the health prevalences for corresponding categories. The mortality data were collected and harmonized by a recent project comparing health inequalities between European countries, the EURO-GBD-SE project (Eikemo & Mackenbach, 2012). The project covered at least the early 2000s, and the health indicator was acquired from the European Union Statistics on Income and Living Conditions (EU-SILC) cross-sectional survey data for 2005 (Eurostat, 2006).

The EURO-GBD-SE project includes 21 areas in 18 European countries. We applied the following selection criteria to determine which countries to include in the study. First, we included those countries in which the mortality data were linked to the census data to avoid numerator-denominator bias in the cross-sectional unlinked data. Second, the countries selected must have participated in the EU-SILC survey. Additional limitations affected individual country selection. Because the measurement of education in the United Kingdom may be incorrect in the EU-SILC survey data (Schneider & Müller, 2009), we determined that it may be a poor match with the mortality data. The size of the Swedish sample in the EU-SILC survey was small, and after exclusions based on missing data, the final sample was, in our judgment, no longer representative. The Dutch data set was based on a labor force survey, primarily included only people younger than 65 and was considered ill-suited for our study. These three countries were excluded from the final analyses.

The eight countries (Table 1) involved in this study included over 60 million person-years and more than 508 000 deaths in the 30–79-year age group. For Italy and Spain, the census-linked mortality data were available only for a few areas, specifically Turin and Tuscany in Italy and Madrid and Barcelona in Spain.

Education was categorized into three groups in this study. The first group includes those with a primary or lower secondary education according to the International Standard Classification of Education (UNESCO, 2006) (ISCED level 2 or less), which is equivalent to approximately nine years of education. The second group consists of those with an upper secondary education (ISCED levels 3 and 4), which is equivalent to approximately 12 years of education. The third group involves those with tertiary education (ISCED level 5 or higher or level 4 in Belgium), which is approximately 13 or more years of education. The categorization of the educational level was primarily based on the harmonization process in the EURO-GBD-SE project, but advice was received through personal contacts with national representatives from the participating

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