Health & Place 27 (2014) 176–185

Contents lists available at ScienceDirect

Health & Place

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

Sub regional estimates of morbidities in the English elderly population

Stephen D. Clark*, Mark Birkin, Alison Heppenstall

School of Geography, University of Leeds, Leeds LS2 9JT, United Kingdom

ARTICLE INFO

Article history:
Received 7 August 2013
Received in revised form
14 February 2014
Accepted 19 February 2014
Available online 13 March 2014

Keywords:
Elderly
Health
Local authority
England
Prevalence

ABSTRACT

This study focuses on identifying the future trends and spatial concentrations of morbidities in the English elderly population. The morbidities to be estimated are: coronary heart disease; strokes; diabetes; cancer; respiratory illnesses and arthritis in the 60 year and older household residential population. The technique used is a spatial microsimulation of the elderly population of local authorities in England using data from the 2001 Census and the English Longitudinal Study of Ageing. The longitudinal nature of the microsimulated population is then used to estimate the morbidity prevalences for local authorities in 2010/2011. With this knowledge, planners will be able to focus the available health and care resources in those areas with greatest need. For most of these morbidities, there is evidence of a strong correlation between the type of authority and the estimated prevalence rates.

1. Introduction

In the coming years, many western societies are predicting a significant shift in the structure of their populations. For many decades the average life expectancies of these populations has been increasing, initially through the tackling of morbidities that affected people at younger ages, but more recently the trend in life expectancies has been boosted by greater life expectancies amongst the elderly population (Christensen et al. 2009). Driven by these increases in life expectancies, there is a clear and anticipated trend for the elderly population, aged 65 or older, to increase significantly both in terms of the numbers of people and as a proportion of the total population (Rechel et al., 2009). Table 1 provides estimates of the share of the population that are 65 years or older in 2010 and in 2060 for a selection of European countries (European Commission, 2009). This table suggests that from around 15% to 20% of the population in 2010 this percentage is anticipated to double to around 30% by 2060.

This longevity comes with several challenges. The recent House of Lords (2013) report into the impact of demographic ageing within the UK states that:

> The ageing of the population is inevitable, and affects us all.

The impact will be felt by everyone, not just the elderly service users but also those having caring responsibilities and those funding services for the elderly (Harper et al., 2011). One important sector in which this shift is anticipated to be most keenly felt is the health care sector (Wanless, 2002), again acknowledged by the House of Lords report:

> The NHS [National Health Service] is facing a major increase in demand and cost consequent on ageing and will have to transform to deal with this. Because of this rising demand, …, needs will remain unmet and cost pressures will rise inexorably.

1.1. Trends in health

As well as understanding the size of future elderly populations, it is important to consider the health care needs of an ageing population. The Office for National Statistics (ONS) (2012) provides three important estimates of life expectancy for England. These are the *life expectancy*, the *healthy life expectancy* and *disability-free life expectancy*. The recent trend in two of these measures is shown in Fig. 1. This 10 year time series shows that on average, women live longer than men and that there has been a sustained increase in life expectancies for both men and women. The trend in disability-free life expectancies however shows somewhat more modest increases and there is much less difference between men and women.

The difference between the life expectancy and the other two measures is the amount of time that a person can expect to spend in an unhealthy condition. There is currently some debate concerning the trends in these measures, however, the interpretation of the continuation of past trends in Fig. 1 would suggest a scenario of morbidity expansion (Gruenberg, 1977 and Kramer, 1980) or equilibrium (Manton, 1982), with the number of years lived in a disabled condition for men increasing from 7.1 years to 7.3 years and 8.7 years to 9.3 years for women.

* Corresponding author. Tel.: +441133436707.
E-mail address: gysc@leeds.ac.uk (S.D. Clark).

http://dx.doi.org/10.1016/j.healthplace.2014.02.010
1353-8292

The remainder of this section contains a discussion of the determinants identified in the literature that have been found to have an influence on the health of the elderly population and also a brief discussion of relevant health data and modelling approaches. The second section describes the spatial microsimulation approach adopted in this study and the penultimate section provides the main results. The final section contains a discussion of these findings; how the work may be applied in other fields; and how it might be taken forward to produce future forecasts for these prevalences.

1.2. Health care determinants

One of the most important and obvious determinants of health care need is age. As people get older, their health care needs tend to increase, although the pattern of use will vary. So, whilst total health care costs may increase with age (Alemayehu and Warner, 2003) some studies have found that hospital care costs actually decrease at older ages, with residential and nursing care cost becoming more significant for the older elderly (Spillman and Lubitz, 2000; Seshamani and Gray, 2004). Later work has argued, however, that age is not actually the best predictor of health care need, and in these earlier studies age was merely acting as a proxy for some other determinant such as the time to death (Zweifel et al. 1999; Clark et al., 2004 (p 276); Werblow et al., 2007) or disability (in a residential care context, see deMeijera et al., 2011).

After age related measures, the next most often cited determinant of health care need is gender (Lubitz et al., 2003; Schellhorn and Stuck, 2000). Fig. 1 illustrates the differences in health status between the genders in England—women tend to live longer than men but spend more time in a disabled condition; this causes women to have greater lifetime health care needs (Hoffmann and Nachtmann, 2010).

As the few studies that have incorporated a measure of disability or illness into their models have shown, the presence of a disabling condition increases health care use. Some studies have also shown that in the UK the number of elderly people with single morbidities has diminished since the 1990s but the number with multiple or co-morbidities has increased (Rasulo et al., 2009).

Other socio-demographic and economic determinants have been shown to influence health care use (Grundy and Sloggett, 2003). Co-habitation is seen to have a positive influence on health—married couples or co-habitees are seen to require less health care through mutual support mechanisms (Murphy and Martikainen, 2010).

Table 1
Percentage of population aged 65 and older in selected European countries.
Source: HEIDI (Eurostat).

Top 16 by 2060	2010 (%)	2060 (%)	% Point change	Bottom 15 & EU27	2010 (%)	2060 (%)	% Point change
Latvia	17.4	35.7	18.3	Switzerland	16.8	30.4	13.5
Romania	14.9	34.8	19.8	Liechtenstein	13.5	29.3	15.8
Poland	13.5	34.5	21.0	Austria	17.6	29.1	11.5
Slovakia	12.3	33.5	21.2	Cyprus	13.1	27.4	14.4
Germany	20.6	32.8	12.2	Netherlands	15.3	27.2	11.9
Bulgaria	17.5	32.7	15.2	Finland	17.0	27.0	10.0
Hungary	16.6	32.1	15.5	France	16.6	26.6	9.9
Portugal	17.9	32.0	14.1	Luxembourg	14.0	26.4	12.4
Italy	20.2	31.7	11.4	Sweden	18.1	26.3	8.2
Slovenia	16.5	31.6	15.0	Belgium	17.2	25.5	8.3
Spain	16.8	31.5	14.6	Denmark	16.3	25.5	9.1
Greece	18.9	31.3	12.3	Norway	14.9	24.9	10.0
Lithuania	16.1	31.2	15.1	UK	16.4	24.5	8.1
Malta	14.8	31.0	16.3	Ireland	11.3	22.0	10.6
Czech Republic	15.2	30.7	15.4	Iceland	12.0	20.3	8.3
Estonia	17.1	30.5	13.5	EU27	17.4	29.5	12.2

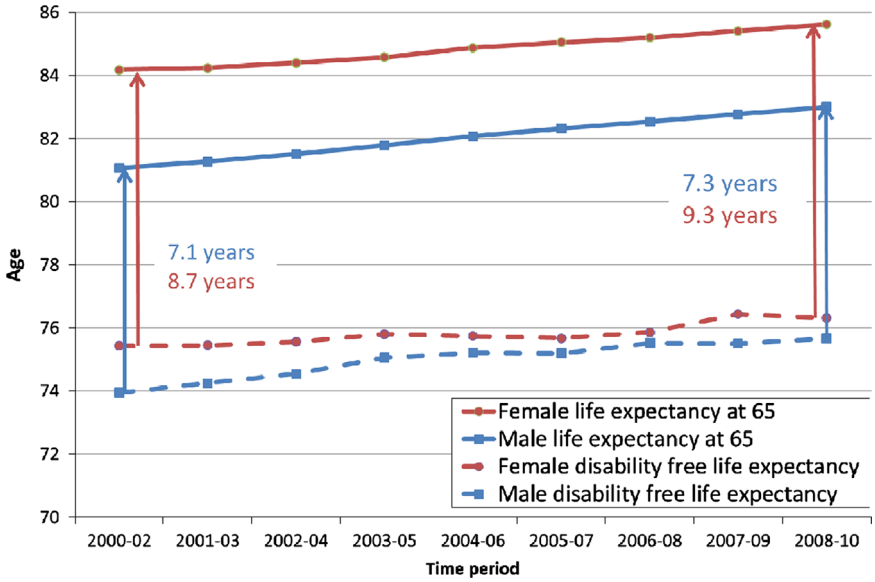

Fig. 1. Trends in life and disability-free life expectancy.