

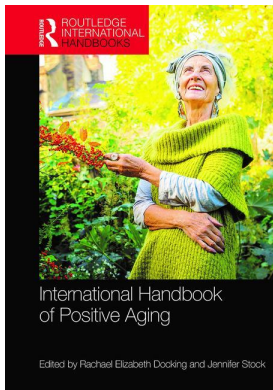
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EPIDEMIOLOGY AND AGING

John Foster

This chapter discusses:

- Basic epidemiological data concerning older people
- The first section will consider some of the wider international trends both in the developed and developing world
- Part two considers some of the international trends concerning four issues particularly pertinent for older people: a) cardiovascular diabetes, b) diabetes, c) dementia and d) falls
- Part three considers two long-standing longitudinal general population studies; firstly the US Health and Retirement Study and secondly the English Longitudinal Study of Ageing (ELSA)
- Part four will summarise findings from the last ELSA report

Part one

General international epidemiological trends

The age structure of the population in many developed countries is shifting towards a greater proportion of people in older age categories (United Nations, 2002). It has been estimated that there will be a 50 per cent increase in the number of older people (65 or more) in the United Kingdom between 2001 and 2031 (Office for National Statistics, 2004). Historically the main causes of death and illness have been as a result of infectious diseases, under-nutrition and inadequate hygiene. The past century has seen this shift to “diseases of wealth” (Caldwell, 1993) and this is especially so in the developed world. As individuals are living longer, the question is whether they are living better (Manton, Corder and Stallard, 1997) as the incidence of chronic diseases such as diabetes and dementia increases in older people. In the United Kingdom and many other parts of the developed world the trend is towards less use of secondary care services (such as general hospitals) to greater use of community services. This is also linked to an emphasis upon public health and health promotion and a policy shift of expecting individuals taking greater responsibility for their own health as some of the “diseases of wealth” become more commonplace. These diseases of wealth include obesity and diabetes linked to greater

consumption of sugar and fats in many Western diets and liver disease links to greater alcohol consumption compared to previous generations (Royal College of Psychiatrists, 2011).

The emergence of “diseases of wealth” and more chronic diseases is now a trend in the developed world. In this context one of the major challenges is improving access to diagnostic services (both primary and secondary care) especially in rural areas. Other challenges include increasing awareness of diseases in older people. The developed world are prone to attributing diseases to being part of the aging process rather than being disease-related (Lloyd-Sherlock, 2005).

The World Health Organization (1998) has made a number of predictions about the impact of aging upon global health. One of these is by 2020 three-quarters of all deaths in developing countries will be related to old age. The main diseases implicated are related to the circulatory system, cancers, hypertension and diabetes. The current projection is that from 2000–2030 the incidence of diabetes in Africa and South East Asia will increase by 160 per cent. In India alone the prediction is that, by 2030, 80 million people will be living with diabetes.

Another important area is mental health. Older people can be prone to isolation as result of bereavement, retirement and loss of contact with family and friends both in the developed and developing world (Van Der Geest, 2004.) Depression and anxiety disorders account for 20–30 per cent of all worldwide primary care visits (Desjarlais et al., 1995). This is likely to be an underestimate of the true incidence of mental health problems.

Most studies suggest that the prevalence of dementia doubles in every five-year age band from 60–90 and it is estimated that in the United Kingdom the dementia prevalence is 6.5 per cent for the population over 65 (Desjarlais et al., 1995). WHO projections estimate that by 2020 more than 55 million people in Africa, Asia and Latin America will have senile dementia (World Health Organization, 1998). These WHO projections have led to greater emphasis being placed on the importance of encouraging lifestyle changes and health promotion (World Health Organization, 2004).

Part two

Data relating to specific conditions

Other chapters will look at these conditions in much greater depth but the author will now introduce some of the international epidemiological data concerning four diseases.

a) Cardiovascular diseases (CVD)

Cardiovascular disease (CVD) is the leading cause of mortality worldwide. It is estimated that in 2010 the worldwide burden for CVD-related deaths was 29.6 per cent (15.6 billion). In Europe there are 4 million deaths per year (2014) attributable to CVD, nearly half of all European deaths (Nichols et al., 2014). Across Europe women are more likely to die from CVD (51 per cent) and the equivalent figure for men is 42 per cent. Coronary heart disease alone accounts for 1.8 million (20 per cent) of European deaths annually. However across Europe mortality rates are falling (Nichols et al., 2014), but the fall is not uniform. Hospital discharge data (notwithstanding the difficulties of comparing uniform reporting methodologies across different countries) can be used to track morbidity rates for CVD. Whilst the trend is towards a fall in mortality there has been a rise in CVD morbidity rates. Thirty-four European countries have seen an increase in CVD hospital discharge rates. Most countries (32) have again seen an increase in equivalent stroke rates but these have fallen in 18 countries. The overall message is that more people are

living longer across Europe with underlying cardiovascular diseases and this presents challenges for secondary and primary care health and social support services.

b) Dementia

Desjarlais et al. (1995) suggest that dementia rates double with every five-year age band beyond 60 and dementia has received increased attention from policymakers, healthcare services and the press. However a recently published study assessing data during the past 20–30 years conducted in Sweden, the Netherlands, England and Spain (Wu et al., 2015) presents a more optimistic picture than commonly portrayed. The Wu et al. study showed very few significant changes in dementia rates over the study period. The only study centre that experienced a significant fall in dementia was the United Kingdom (22 per cent reduction, $p=0.003$). The authors suggest that the main explanation for the non-significant trends have been the rises in life expectancy, improved health and living conditions. Furthermore the explanation for the non-significant Scandinavian and Dutch findings may be health service configurations that have targeted prevention and treatment of vascular and other chronic conditions. Other chapters in this book will explore this in greater depth; however there is an emerging body of evidence that one of the keys to positive aging is a healthy diet, stopping smoking and measures to improve cognitive function and the extension of services that pick up signs of cognitive decline at an early stage so that support services can be put in place.

c) Diabetes

Whilst the picture for dementia is possibly not as pessimistic as commonly supposed, the opposite is true for diabetes, which is a disease whereby the pancreas produces insufficient insulin and as a result there is a significant rise in blood glucose levels. This causes damage to blood vessels, nerves and other body tissues. Serious complications can be cardiovascular disease, impaired vision and sometimes blindness and kidney disease. Wild et al. (2004) have projected the likely prevalence of diabetes in 2030. (Type 1 and Type 2 Diabetes are not differentiated in most international data sets.) In 2000 the worldwide estimate for diabetes was 2.8 per cent (171 million) and the projection is that by 2030 this will be 4.4 per cent (366 million). The rise in diabetes prevalence is related to increased worldwide obesity rates and an increasingly aging population. In consequence it is possible the projections of Wild et al. may be underestimates. The group where the largest increase is expected is over 65 and in order to reduce the likely burden of diabetes (and indeed dementia and CVD), interventions will need to target changes in diet and promote an increase in physical activities.

d) Falls

Falls have an impact on individuals, carers and secondary and primary healthcare services. They can result in prolonged hospital admissions and it is estimated that fracture management (mainly hips) cost the NHS £1.7 billion annually (Lawrence et al., 2005). They are the most common form of accidental injury in older people and the most common cause of accidental death in individuals over 75 (British Geriatrics Society, 2005). Also, frequent falling can be linked with anxiety and depression as an individual develops a fear of falling. US data indicates that 30 per cent of all “community-dwelling adults” fall annually and this figure rises to 40 per cent for those individuals over 75 and half of individuals who fall do so at least twice annually (Hauer et al., 2006). Six per cent of falls in individuals over 65 result in a fracture and 1 per cent of these

are hip fractures. Falls are the most common reason older people are admitted to accident and emergency services and, for those over 75, hip fractures, resulting in hospital admissions, present a significant burden for healthcare services (Lawrence et al., 2005).

Part three

Collecting epidemiological data

As the previous section indicates, the main variables of interest for epidemiologists are trends relating to disease morbidity (prevalence) and mortality rates. However another way of collecting epidemiological data is general population surveys. This section will briefly consider two international longitudinal surveys.

a) The US Health and Retirement Study (HRS)

This is a study administered by the University of Michigan. It is supported by the US National Institute of Aging and Social Security Administration and the first wave was conducted in 1992. The main aim is to explore changes in employment and health trends and the data collected includes income, work, assets, pension plans, health insurance, disability, physical health and functioning, cognitive functioning and healthcare utilisation. The participants are a representative sample of approximately 20,000 Americans over the age of 50 who are given an in-depth interview every two years. Thus it “provides an invaluable and growing body of multidisciplinary data that researchers can use to address important questions about the challenges and opportunities of aging” (Hodes and Suzman, 2015). A website (National Institute of Aging, 2015) provides further details about the study and details about how to access the study data once a researcher has been registered on the system.

b) English Longitudinal Study of Ageing (ELSA)

The English Longitudinal Study of Ageing (ELSA) (ELSA, 2011) is an epidemiological study covering health, employment and financial status, access to support services and participation in wider society, amongst other issues. There is an interview by a trained researcher and a subsequent visit by a nurse where data such as height, weight, blood pressure and prescription drug use is collected. Participants for ELSA were recruited from a representative sample of the population aged 50 and older. Wave 1 consisted of a sample of 11,050 respondents and commenced in March 2002. The participants were originally drawn from the Health Survey of England (HSE) (UK Data Service, 2014). However the HSE concentrates on individuals living in private households and from Wave 3 onwards participants were recruited from residential care homes or similar institutions. The latest data collection (Wave 6) took place from June 2012 to June 2013.

Part four

Diseases of prosperity/consumption: case study on alcohol and cigarettes

There is now evidence (Royal College of Psychiatrists, 2011) that older people are drinking more than previous generations. There are a number of possible reasons for this but the reason

often postulated is the fact that alcohol is cheap and increasingly convenient to buy. This links to one of the challenges that will face policymakers and service designers, and this is how to lessen the health burden presented by “diseases of wealth”, most notably food, alcohol and tobacco. A recent report (Matthews et al., 2014) was able to track data from Wave 0 (2002–2003) to Wave 6 (2012–2013) and consider some health-related behaviours over time. These included cigarette smoking and alcohol consumption. The trajectory for smoking-related behaviours was uniformly in a healthy direction and this was particularly marked in the higher social classes and better-educated groups.

The main trends for alcohol were less clear cut and will be outlined in brief. Heavy drinking in this analysis (Matthews et al., 2014) was defined as daily or almost daily drinking. Almost a fifth of individuals were drinking daily. It is worth noting that this may not be a proxy for heavy drinking in the elderly, as aging is associated with a greater likelihood of daily or almost daily drinking (Burns Murdoch, 2012). The general trend was that there was little change in heavy drinking rates from Wave 0 to Wave 6. There was a small increase (non-significant) in heavy drinking rates and men were most likely to be heavy drinkers but marital status had no relationship to heavy drinking. The relationship between greater wealth, higher educational level and increased likelihood of heavy drinking was confirmed. Better health was associated with increased drinking and those individuals with impaired health were less likely to drink daily and almost twice as many individuals reduced their drinking as increased it.

Alcohol presents a conundrum because drinking in older people is associated with positive outcomes and there are some commentators (Iparraguirre, 2015) who suggest that alcohol consumption is a proxy for “successful aging”. It is unlikely this is connected to the chemical make-up of alcohol; rather alcohol is likely to be a proxy for having a greater social contact and integration, which is related to positive health and social outcomes. Older people, like their younger counterparts, only tend to reduce their drinking if they become unwell and frail. This belief that alcohol may be integral to successful aging now has to be put into the context of recent NICE guidelines (NICE, 2015) that suggest there is a link between excessive drinking, cognitive decline and, most notably, dementia. Some media commentators have mistakenly interpreted this as a direction to drink no alcohol if an individual wishes to avoid dementia (Donnelly, 2015).

Part five

Concluding thoughts

As this chapter has shown the trend is that due to improvement in health services, environment and overall prosperity, individuals are living longer and probably “living better”. However it is questionable whether these trends can and will continue. The most prevalent diseases – cardiovascular diseases and diabetes – are at least in part diseases of consumption and prosperity and the key to reducing these burdens is education and lifestyle changes. Many governments have become increasingly neoliberal with policies that will result in less health and social care provision by the state and possibly diminished pension provision. Neoliberal regimes also tend to emphasise encouraging personal responsibility and diabetes, cardiovascular disease and even possibly dementia may be seen as diseases which can be lessened if individuals can be encouraged to make lifestyle changes that will lessen the health and social care burden for the state. It is possible that, in days of scarce resource, in future years the promotion of “positive aging” will not be seen as the responsibility of the state but the individual.

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