The world grows old

Introduction

The Western world turned grey in the 20th century and much of the rest of the world will follow this century. Improvements in housing, sanitation, nutrition and education, and smaller family size, higher incomes and public health measures such as immunization were the major factors driving this epidemiological transition. In many developed countries, this shift started in the mid-19th century and life expectancy increased as infant and maternal mortality and deaths from infectious diseases in children and young adults fell. Over the last 30 years, gains in life expectancy are also being made in middle age. In countries such as Japan the transition started later but proceeded more quickly. In many developing countries, the transition started even later and is still in progress.

In the West, the impact of an ageing population on the retirement age, pensions and the cost and practicalities of service provision has become an important issue. An increasingly small number of people of working age cannot fund the pensions of older people with ever longer retirements. Most older people are independent, but if they need help, family care is often not available; many of their daughters will be working, families are scattered geographically and options for care are less well developed than child care.

The common afflictions of old age are now accepted, not as a cause for shame, but as serious diseases. Examples include the public information about the dementia of ex-President Reagan of the USA and a dramatization of the same disease as it affected the famous philosopher and novelist Iris Murdoch and Margaret Thatcher. Middle-aged, middle-class articulate ‘children’ such as Michael Ignatief, Linda Grant and Margaret Forster have written in detail about the dementing process as it affected their parents, themselves and their families. Terry Pratchett, who has a form of Alzheimer’s disease which initially affects visuospatial perception, discusses aspects of dementia in the media. Still Alice, a debut novel about Alzheimer’s by neuroscientist Lisa Genova, became a New York Times bestseller in 2009.

The Human Rights Act 1998 (2000) has the potential to offer protection to vulnerable elderly people, especially Articles 2, 3, 8, 10 and 14 (see box below). This Act applies to all public bodies, i.e. the NHS and Local Authority Social Service Departments.

<table>
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<th>Human Rights Act 1998</th>
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<td>Article 2</td>
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Population trends

The United Nations report World Population Ageing 2009 (United Nations 2009) describes four key points about population ageing:

1 Unprecedented, without parallel in the history of humanity.
2 **Pervasive**, affecting nearly all the countries of the world, the exceptions being African countries ravaged by HIV-AIDS and civil wars.

3 **Profound**, with major consequences and implications for all aspects of life.

4 **Enduring**, as short of a worldwide disaster, the trend will not be reversed.

In 1950, the proportion of the world population aged 60 and older was 8%; this had risen to 11% in 2009 and is expected to rise to 22% in 2050. Data from different countries are shown in Table 1.1.

Japan’s population is the oldest in the world and most European countries have median ages of around 40 years. Population ageing is often thought of as a problem facing the developed world, but because the world’s most populous countries are less developed, nearly two-thirds of older people already live in less developed regions. This proportion has increased from approximately 50% in 1950 and is predicted to rise to around 80% by 2050 (see Figure 1.1).

The greatest absolute numbers of older people live in China and India. An excellent online resource to look at demographic changes in different countries over time is Gapminder (http://www.gapminder.org/) – the trends with time, effects of war (e.g. France 1918, 1944; Japan 1945) and HIV (e.g. Swaziland) are readily seen.

Another important statistic for a country is its **total dependency ratio**, that is the number of under-15s plus the number of those aged ≥ 65 years per 100 people aged 15–64. In 2009, for the world, the sum of youth and old age dependency is around 50. In Africa the ratio is much higher due to the proportion of children. In Europe the ratio is similar to the world average but old age dependency exceeds youth dependency (see Figure 1.2).

There are marked differences in the **pace of population ageing** between developed and less developed countries, e.g. it took 115 years (1865–1980) for the proportion of older people to...
double in France (from 7 to 14%) whereas in China the proportion will have doubled between 2000 and 2027. The number of older people in the world is expected to exceed the number of children for the first time in 2045. By 2030 most countries will have a similar age structure, as can be seen from the population pyramids in Figure 1.3.

**Developed countries**

**Demographic changes**

- Death which was common in infancy and usual before 65 years is now rare in infancy and unusual before 65 years.

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**Figure 1.3** Population pyramids (age in years), 1999 and 2050 (UN 2009). Reproduced with permission of UN.
Life expectancy continues to rise, partly due to improvements in medical care of conditions such as hypertension and ischaemic heart disease.

The dramatic rise in the elderly population over the past 100 years is now slowing. However, the number of ‘old old’, i.e. those ≥ 80 years of age, is still increasing rapidly.

The Commission on Global Ageing warns of the risk of ‘ageing recessions’ due to a fall in the size of the workforce (labour shortages) plus increased service demands (caring services). In 2010, China overtook Japan as the world’s second largest economy, due in part to the ageing and shrinking population of Japan.

Medical services

- Sophisticated health systems are established with specialist services for the elderly.
- Population trends alone require increased health funding each year (estimated at 1% per year in the UK) in addition to inflation and costs due to technological development.
- Rising expectations of older people and their carers fuel rising health costs.
- Ethical dilemmas will be more pressing, e.g. the prolongation of death by technological intervention or medicated survival of the young chronically sick and acutely ill, and frail elderly patients.
- Financial provision must be made to support the choices made. An elderly person costs the health services nine times as much as a young person.
- Medical training continues to concentrate on increasing specialization, so practitioners cannot cope with complex aetiologies (sociological, psychological and medical) and multi-pathology (co-morbidity), and the atypical presentations common in elderly patients, i.e. a mismatch between aspirations of young medics and the needs of their elderly patients.

Community services

- Community care is individually based and very varied. Comparison between provision in different countries is difficult because of political, socio-economic and demographic differences. It is easier to make comparisons with regard to institutional care, usually in residential or nursing homes. There used to be marked variation between countries, but figures are converging to 5–9% of the 65+ group being in care (5.5% in 2006 in England).

- The historical development of the patterns of care is similar. In all societies there has always been a heavy reliance on self-sufficiency and family care. The healthy and wealthy old have always fared the best. For the more disadvantaged, there has always been a need to rely on support from non-family members.
- In the ‘Old World’, non-family support was originally provided by the church or by occupation-related charities or guilds. In England, the state began to become more prominent in the 17th century with the first Poor Law Act, which provided workhouse care and ‘outdoor relief’. This continued until the end of the 19th century. The 20th century saw the beginning of the welfare state – gradually growing in the first half of the century, reaching a peak mid-century and then declining towards the end of the 1980s. At the time of decline, the general move was away from the provision of services by the state to state regulation of services provided by other organizations. This regulation was gradually devolved and central control lost or weakened.
- From the 1980s onwards, an increasing number of nursing homes in the USA, and then Europe and Australia were run by profit-making organizations (increasingly large multinational companies). The for-profit companies had a worse record for staffing levels (20% less than non-profit-making institutions) and skill mix, and a higher incidence of violations of standards. There was concern that the regulatory arrangements were failing to improve or even maintain standards and costs were escalating.
- For example, in Australia, the proportion of for-profit nursing home beds was historically about 27%, but had risen to 55% by the year 2000. Between 1996 and 2000, the cost of public funding of private nursing homes rose from A$2.5 to A$3.9 billion. The cost of the regulatory system doubled, but unannounced inspections ceased, reports of inspections became more difficult to obtain and available sanctions were rarely used.

Less developed countries

Demographic changes

- Once people reached old age in developing countries, their life expectancy was not much lower than in the developed world and this remains the case (Table 1.2).
- Until recently the proportion of older people in the population was low, but as countries such as...
China and India are so populous, over 60% of the world's elderly population already live in these countries.

- The population structure of these countries is changing very rapidly with falling birth rates as contraceptive policies become effective (or were imposed), infant mortality is reduced and to a lesser extent as survival in adult life improves.
- Population patterns are at risk of distortion by epidemics, e.g. HIV/AIDS, civil war and migration, e.g. sub-Saharan Africa.
- European studies show that the survival of babies with low birth-weight and reduced growth in the first year leads to poor adult health – especially regarding BP and blood sugar control. This is likely to have significant consequences in India and Southeast Asia.
- Potentially preventable disabilities acquired in youth will complicate old age.
- The poor will be unable to acquire sufficient wealth to provide for themselves in old age; therefore the total burden will either fall on the state or will be neglected.
- There are many pressing financial demands for expansion, e.g. education, housing and development of infrastructure.
- Many countries struggle with debt, and political instability is common.

### Medical services

- Health services are often primitive, patchy and inappropriate to needs.
- ‘High-tech’ procedures for the few may be favoured over public health measures that would bring more benefit for the whole population.
- Doctors and nurses training in undeveloped countries will need expertise in elderly care because of the changing demography of their own countries. Depending on their country of origin, if they move to a developed country, they may find themselves confronted by very elderly patients for the first time.

### Community services

- The majority of the population continue to work as long as they are able and must rely on family support; retirement, at least for most people, is a concept of the developed world.

### Ageing in India

India is in a rapid phase of transition. Life expectancy at birth has been increasing since the 1950s (Figure 1.4). As there are more children in India than China, by 2050 India is predicated to have overtaken China as the world’s most populous country.

Life expectancy at the age of 60 in India has also increased for both men and women between 1961 and 2008 by 4–5 years and is now 16.3 years for men and 17.2 years for women. As a result, India’s elderly population is growing rapidly.

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**Table 1.2 Mean life expectancy at different ages (UN 2009). Reproduced with permission of UN.**

<table>
<thead>
<tr>
<th>Country</th>
<th>At birth</th>
<th>At 60 years</th>
<th>At 80 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>More developed</td>
<td>76</td>
<td>22</td>
<td>9</td>
</tr>
<tr>
<td>Less developed</td>
<td>65</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>Least developed</td>
<td>55</td>
<td>16</td>
<td>6</td>
</tr>
</tbody>
</table>

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**Figure 1.4 India’s elderly population (UN 2009).**

Source: Bloom et al. (2010). Reproduced with permission of John Wiley & Sons, Inc.
Within India there is huge variation in health care, with very high standards in large centres but swathes of the country still lacking basic provision. The private sector accounts for over 80% of health care spending. The extremes are exemplified by cardiac centres which offer coronary surgery to health tourists and are feted by Western politicians. However, 10% of Primary Health Centres have no doctor. One approach had been the development of a 4-year Bachelor of Rural Health Care, but the lure of the city and practical problems with training remain a challenge.

**Disease and disability in the over 60s in India**
- Cardiovascular disease is the commonest cause of death in old age.
- There are 11 million elderly blind people – 80% due to cataract.
- Sixty percent have hearing impairment.
- Nine million have hypertension.
- Five million have diabetes.
- 0.35 million have cancer.
(Source: WHO 1999.)

In 1999, the Government of India Ministry of Social Justice and Empowerment developed the ‘National Policy on Older Persons’. This stressed the importance of setting up geriatric services and appropriate training, but implementation has been limited. Professional organizations are developing, including the Indian Academy of Geriatrics which publishes a quarterly journal, and the charity HelpAge India.

HelpAge India sponsored an economic and health survey of people aged 80 and older in eight cities in India, targeting mid or lower socio-economic groups. The results (2010) highlight the dependency of this group on their children for financial support (70%) and practical care. One-fifth of those interviewed reported abuse from their family. Half of the participants considered their health to be poor or very poor; the major problems were pain, poor vision, hypertension, arthritis and asthma. Most relied on a son to fund their health care.

Overall, 60–75% of elderly people in India are economically dependent on their families. The extended family is disappearing and the social status of elderly people is being eroded. Since 1992, an old age pension has been available for those over 65 with no means of support.

In 1997, there were only 354 old people’s homes, usually organized by charities. The number of for-profit homes is now growing very rapidly, but provision is aimed at the emerging wealthier middle class.

### Ageing in Africa

The pattern of ageing in Africa is different from the rest of the world due to the effects of AIDS and war, demonstrating how the unexpected can undermine projections. In 2009, the life expectancy at birth in Lesotho, Swaziland, Zambia and Zimbabwe was less than 47 years, and less than 50 years in a total of 13 other African countries. The only country with a lower figure currently is Afghanistan.

Sub-Saharan Africa has a more heavy burden of HIV-AIDS than any other region of the world, accounting for two-thirds of global cases. In 2008, around 1.4 million people died from AIDS and 1.9 million people became infected with HIV. Since the beginning of the epidemic, more than 14 million children have lost one or both parents to HIV/AIDS. Most AIDS deaths occur among young adults, with a devastating effect on families, communities and economies. The head of the family in 43% of Zimbabwean families with AIDS orphans is a grandmother. As their children and grandchildren die, the older generation are left with no carers for themselves. Older people do contract HIV infection, and it may run a more rapid course in this age group, but the incidence is unknown.

The response to HIV has been variable. Political denial of the problem was a major factor in the slow response in South Africa. Botswana began a national treatment programme, ‘masa’ (dawn), in 2002. It has better infrastructure than many countries in the region and after a slow start has now reached 90% coverage in terms of retroviral therapy.

Forty percent of the world’s armed conflicts rage in Africa, with over a thousand fatalities in 2010. Most deaths due to direct violence are in those aged between 15 and 45. Indirect factors including movement of refugees, rape, famine, poverty and failure of infection control programmes, e.g. for TB, kill thousands more and limit sustainable economic development. For example, in over 10 years of war in the Democratic Republic of the Congo an
estimated 350,000 people have died in combat but an estimated 5.4 million people have died as a result of the conflict, the vast majority from malnutrition and disease. Out of 50 African countries, 11 were considered to be involved in some form of armed conflict in 2010. However, since the African Union declared 2010 the Year of Peace and Security, the number of conflicts has fallen and there may be more willingness to criticize and take action against other African countries.

Ageing in Brazil

Brazilians’ life expectancy has shot up to near Western European levels from just 37 years in 1940, while the number of births per woman has fallen to 1.8 from near 6 in 1970. In 1990 it was predicted that HIV-AIDS would have a major impact, but strategies including widespread promotion of condom use, educating prostitutes, needle exchange programmes and most controversially the manufacture and provision of cheap generic antiretroviral drugs were remarkably successful in containing the threatened epidemic. Disability rises with increasing age and the prevalence of difficulty walking and performing personal care is similar to that found in the UK (especially in men). Those with less education and wealth were almost twice as likely to suffer from disability compared with their peers. Urban dwellers were also more disabled than those in rural areas.

Global warming

The Kyoto protocol came into force in 2005. It is predicated that if greenhouse gas emissions are not reduced the health burdens of climate change are likely to double by 2020 (Kovats and Haines 2005). The experience from France in the 2-week summer heat-wave of 2003 indicates that older people are the most vulnerable. Most deaths occur in people over 70 and within the first few days of a heat-wave. The estimated number excess death in August 2003 was 13,600. The deaths were not due to hyperthermia but stress on already strained cardiac and respiratory systems. Preventative measures should be taken when a heat-wave is forecast.

Global poverty

Whilst the developed world struggles with diseases of affluence, most of the world struggles with poverty. Global poverty is falling, but this is mainly due to China – poverty in Sub-Saharan Africa is increasing.

There is also a fear that food poisoning may become more frequent with higher environmental temperatures. Frail elderly people are unable to withstand severe and prolonged diarrhoea. Other factors will include increased air pollution. Mosquito-borne diseases may spread; mosquitoes that can carry dengue fever virus were previously limited to elevations below 3,300 ft but recently appeared at 7,200 ft in the Andes in Colombia. Malaria has been detected in new higher-elevation areas in Indonesia and Africa.

Global warming is also associated with more unpredictable climatic events. Oxfam reports that the number of natural disasters, e.g. floods and cyclones, has quadrupled in the last two decades, and the number of people affected has increased from around 174 million to over 250 million a year. Older people tend to fare worse in all natural disasters; HelpAge International reported that older people had disproportionately high death rates in the 2004 Asian tsunami and their needs were overlooked in chaotic relief operations. Hurricane Katrina forced the evacuation of 1.7 million people in 2005 and led to deaths and long-term health problems for 200,000 New Orleans residents. The true toll of the October floods in Pakistan 2010 will not be known for years as the poverty resulting from destroyed livelihoods continues to claim lives. 2010 was the hottest summer on record in Russia with Moscow temperatures topping 38 °C; the death rate from respiratory problems triggered by air pollution from widespread forest fires increased dramatically.
Inter-generational strife

This is a potential problem in both developed and under-developed countries. Strains and conflict could arise due to the falling dependency ratio (i.e. fewer working people to support those in need of care). There is the prospect of poverty in old age for the current young due to increased life expectancy but a decline in provision for pension payments (compared with current retirees). There is also an increased expectation of those growing old in the next two decades, e.g. aspiring to early retirement with decreased disability levels but still expecting enhanced care services.

The inverse of the dependency ratio is the support ratio. The number of working-age adults per older adult will decrease in all regions between 2010 and 2050 (see Figure 1.6).

Social aspects of ageing

Old age is unfortunately often a time of loss. The potential losses are varied, often interrelated, and include:

- Health and eventually life, due to increasing pathology.
- Wealth due to termination of employment (in the UK, the default retirement age of 65 was removed in April 2011, making compulsory retirement at any age unlawful unless justified).
- Companionship following bereavement (spouse, siblings and friends).
- Independence due to acquired disabilities.
- Homoeostasis due to impairments of the autonomic nervous system and renal function.
- Status following retirement and loss of independence.

The above changes and losses may expose people to the following consequences:

- Unhappiness, grief, depression, suicide (see Chapters 4 and 16).
- Increased incidence of illness.
- Increased risk of accident.
- Poverty; though the proportion of pensioner households with low incomes has fallen.
- Dependence and abuse.
- Malnutrition and subnutrition (see Chapter 11).
- Hypothermia (see Chapter 12).
Loss of wealth

Income falls on giving up paid employment. Pensions are not normally equivalent to wages and the average pension is about half of the average working wage for a couple. Disabilities themselves may result in additional costs, e.g. for help, aids and adaptations.

Retirement

Retirement is a mixed blessing: 20% of workers fear retirement but 50% look forward to it. Retirement is a potential period of loss – of income, status, companionship and self-confidence.

To counteract the disadvantages, there are positive aspects of retirement:

- It may occupy one-third of life.
- Many remain fit and healthy for most of this time.
- It is an opportunity to redesign lifestyle and to promote good health.
- Time is available for new or renewed interests, activities and relationships.

But retirement may bring social problems and it is a time when some difficult decisions will have to be made. Dilemmas encountered may include:

- Becoming a carer, e.g. of parents or grandchildren early in retirement or of spouse or siblings later on.
- Where to live – it is probably best to stay put where comfortable and well known. If a move is contemplated, earlier is better than later, as the retiree is likely to be fitter and one of a pair.
- What sort of accommodation? Somewhere enabling independence, despite acquired disabilities.
- Driving – may need to be given up at some stage, so beware of geographical isolation (see Chapters 4 and 16).
- Sex – it is ‘allowed’ even in the very old so long as it gives pleasure to both partners (see Chapter 13).
- Boredom affects 10% of the retired – another 20% (although not bored) would prefer still to be working. People who are poor, disabled, poorly educated and isolated are most likely to be dissatisfied with retirement.
- The economic consequences of an expanding population of retired persons dependent on pensions are causing widespread concern within the developed world. As a consequence, the retirement age may be gradually increased to 70+ years. There will be a need to review the nature of paid employment in later years with consideration of plans to make partial or gradual retirement easier without loss of status, pay or pension rights. Preparation for retirement is vital.
- The increasing vulnerability and unpredictability of the global financial markets also pose threats to pension provision. The pension aspirations of many current workers may not be met and may be considered a potential threat to world finance.

Recommended physical activity in retirement

- Regular moderate-intensity activity for 30 min on most days.
- Short bursts of exertion may have a cumulative effect.
- Start slow and gradually build up intensity and duration.
- Work on strength, flexibility and balance.
- If an activity is not provoking symptoms, it is unlikely to be doing harm.
- Generally benefits of activity outweigh risks.
- When activity requires special equipment or clothing, make sure it is appropriate and in good condition.

Some myths of ageing

- It is a new problem No – there have always been elderly people; there are now more. In the past, most people were denied the opportunity of old age by dying young. Now, most babies born in developed countries can expect to survive into their 80s.
- All elderly people are decrepit and senile No – most live independent lives and mainly in their own homes (96% in the UK).
- The chronic conditions of old age are untreatable No – medical treatment at all ages is primarily the management of chronic conditions. The courses of disease can be slowed or modified, e.g. Parkinson’s disease or Alzheimer’s
disease, symptoms can be alleviated, e.g. pain, breathlessness, and in deficiency diseases (pernicious anaemia, osteomalacia and myxoedema) normal function can be restored.

- **Natural decline cannot be prevented**  
  No – regular physical activity can rejuvenate and physical capacity can be improved by 10–15 years. Also, adopting a ‘healthy lifestyle’ in middle age (no smoking, avoidance of obesity and taking regular exercise) can delay the onset and decrease the eventual severity and duration of disability towards the end of life.

- **Treating elderly patients is a waste of money**  
  No – not to treat is not only inhumane (see Human Rights Act 1998) but also often expensive, and neglected problems may lead to longer-term, higher expenditure (i.e. ‘care’ can be more expensive than ‘cure’).

- **Care of the elderly is bankrupting the NHS**  
  No – it is true that elderly people account for more costs within the NHS than the young (except for the management of children). However, most people make few demands on the NHS until the 15 years prior to their death. Costs for this terminal period are similar if death occurs at any age, i.e. 40, 50, 60 years, and so on. In fact, death in very old age may be gentle and not incur the high cost of unrealistic heroics.

- **All elderly people are depressed and lonely, and are better off dead**  
  No – the majority of elderly people are not depressed. Well-being and contentment may feature in later life more than during the ambitious and frustrated productive years. Although the general population thinks that 90% of elderly people are lonely, only 10% of the elderly consider themselves to be so.

- **The elderly are of no use**  
  No – they are a valuable resource with experience and, sometimes, wisdom. The majority of carers are elderly and these include grandparents assisting in the rearing of their grandchildren because of absent or working parents. The old are the backbone of the voluntary services.

- **Old patients have a limited future and poor prognosis**  
  No – life expectancy at 65 years is in excess of 17 years for a man and 20 years for a woman. Survival for 5 years after many surgical and oncological treatments is recorded as a success.

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**FURTHER INFORMATION**
