Disability, dementia and the future costs of long-term care

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Summary: Increasingly sophisticated efforts to project future long-term care (LTC) expenditure highlight that this is very sensitive to assumptions made about future rates of disability and dementia. This article reviews different ways of formulating such assumptions and gives examples of their impact on future LTC expenditure projections in England. Using disability scenarios from an epidemiological model (based on assumptions about chronic diseases and their outcomes and expected treatments), suggests that assuming constant prevalence of disability may be optimistic. The projections indicate that investing in cost effective public health and management of chronic conditions measures that moderate disability or slow down the progression of dementia may produce good returns in terms of reducing the future costs of LTC.

Key words: disability trends, dementia, long-term care expenditure, compression of disability, chronic conditions

As the numbers of older people rise, so do concerns about future levels of expenditure on long-term care (LTC) and how this care should be funded. In the last decades there have been increasingly sophisticated efforts to project future LTC expenditure, both at national and international levels. As LTC services are very labour intensive and there is limited scope for productivity improvements,1 the idea that future LTC costs could be contained as a result of care needs not growing as fast as the future number of older people has attracted a great deal of attention. However, in many countries there no evidence that this may be the case.2 Projections of LTC demand and associated expenditure have shown that relatively small changes in the prevalence rates of functional disability can have a substantial impact on future expenditure.3,4 This means that it is important to choose carefully the assumptions made about future disability and dementia rates of older people, as increases in the future numbers of older people may not necessarily be accompanied by increases of the same magnitude in the number of people requiring LTC.

Projecting LTC expenditure

This article reviews different approaches to choosing assumptions about the future care needs of older people, including: extrapolation from past trends; hypothetical decreases in prevalence rates in order to take into account changes in life expectancy; asking experts for their views about the future; and projections based on expected changes in the prevalence of chronic conditions and mortality rates.
Assuming rates remain constant over time

The most basic method for projecting future LTC expenditure is to multiply age-specific LTC expenditure by the future number of people in each age group. This method assumes, implicitly, that disability rates do not change over time and that ageing is the only driver of expenditure. More complex projection methods allow explicit analysis of the impact of changes in the prevalence of functional disability and dementia (and socio-demographic variables) on LTC expenditure.

In the face of the inevitable uncertainty about future disability trends, many projections of future LTC expenditure have assumed, as a base case, that disability and dementia rates by age remain constant over time, while the future number of older people needing care changes as a result of changes in life expectancy and other socio-demographic factors. The impact of changes to the unchanged prevalence assumption is then explored by changing the prevalence rates by a small percentage per year (such as 1% or 0.5%).

This assumption has often been criticised as being pessimistic because it does not consider possible postponements in disability as life expectancy increases. Because age-specific prevalence is unchanged while age-specific mortality rates are reduced, this assumption assumes that in the future older people will, on average, spend a longer period of their life in disability.

Extrapolating from past trends

Another approach, taken by Jacobzone et al., involves identifying past trends in disability rates and then extrapolating those past trends into the future. There are two main problems with this approach.

The first is that evidence from past trends is limited because consistent longitudinal data on the health and disability status of older people is only available for a few countries (see Jagger et al. in this issue).

The second problem is that the past may not necessarily be the best predictor of the future. Social, economic, scientific and environmental changes can dramatically alter the patterns of mortality and disease. Epidemiologists use the term ‘epidemiological transition’ to describe these shifts in disease patterns. In recent years, for example, there have been important reductions in the age-specific mortality rates for major cardiovascular diseases, which have in turn led to further delays in mortality, which, combined with higher rates of obesity and lower smoking rates, could potentially lead to new increases in disability rates.

Projections based on hypotheses linked to changes in life expectancy

In the context of the debate about the relationship between the postponement of mortality and possible postponements of disability, another approach used in LTC projections has been the modelling of hypothetical assumptions that link expected rise in life expectancy with assumptions about changes in age-specific disability rates. An example of this is a scenario often called the ‘Brookings scenario’ as it was originally used in projections by Wiener et al. at the Brookings Institution. A typical example of this scenario can be described as follows: if life expectancy at age 65 is projected to rise by three years between 2007 and 2030, then the disability rate of a person aged 65 in 2007 would be applied to a person aged 68 in 2030. This assumption effectively decreases disability rates and, to a certain extent, can compensate for increases in the number of older people when projecting LTC expenditure. A similar version of this method has been used by the European Commission’s Economic Policy Committee (EPC) in the context of their projections of future LTC expenditure. In fact, the ‘reference’ (or base case) LTC projection in the EPC’s latest projections assumes that disability rates will be postponed by half the increase in life expectancy.

In the case of England, results from the Personal Social Services Research Unit (PSSRU) Aggregate Long-Term Care for Older People Model show that, if we assumed that for every year of life expectancy gained, disability rates could be pushed back by one year, future LTC expenditure for older people would amount to 1.9% of Gross Domestic Product (GDP), compared to 2.7% under the constant disability assumption.

This scenario has the advantage of being intuitive, not requiring information about disability trends, and being easy to calculate. However, due to its hypothetical nature, the results of this scenario should be treated with caution as they are not grounded on evidence.

Asking experts their views about the future

Another approach, particularly as projections of LTC expenditure tend to be carried out by economists, is to consult with experts in the field, in order to obtain their views about future trends in disability and dementia rates. This normally involves using consensus building methods (such as a Delphi or focus group) in order to find a set of assumptions about the future that a group of experts agree with.

The Delphi approach was used to obtain scenarios about the future prevalence of dementia and the future care needs of individuals living with dementia. A panel of experts on dementia, including old age psychiatrists, neurologists, public health doctors, basic scientists, health economists and service professionals, considered various future scenarios and were, overall, moderately optimistic about the impact of future scientific advances and changes in risk factors on the future prevalence rates of dementia. However, the panel also warned that improvements in the quality of care were required, which may offset some of the potential savings from decreased prevalence.

This type of research does present some important challenges. First of all, it is very difficult to establish the representativeness of a panel of experts. Second, translating the view of the expert panel into scenarios that can be modelled may not be straightforward, unless the panel is given very clear parameters.

Using projections from epidemiological models of chronic conditions and their disabling and mortality outcomes

As the paper by Jagger et al. (in this issue) highlights, the process by which older people develop care needs is complex and understanding how those care needs emerge is key to being able to model them. As part of the MAP2030 project, the SIMPOP model by Jagger et al. has been linked with the PSSRU Aggregate Long-Term Care for Older People Model, enabling the PSSRU model to produce projections of future expenditure on LTC for older people for the health and disease scenarios in SIMPOP.

Combining the Central Health Scenario disability rates obtained by the SIMPOP...
model (which assumes unchanged prevalence of chronic conditions and risk factors) with the PSSRU aggregate model results in higher future LTC expenditure than in the previously used base case assumption of unchanged age-specific disability rate (by 2032, total LTC expenditure would have grown to 3.2% of GDP rather than 2.7%).

The reason for this is that if the prevalence rates of chronic conditions and risk factors remain unchanged and their disability and mortality outcomes also remain unchanged, while life expectancy continues to increase, more older people will be spending longer periods of their life in disability; hence, the overall age-specific prevalence of disability will increase. This suggests that maintaining unchanged disability rates in the LTC model (in the context of increased life expectancy) would be an optimistic assumption, compared to an assumption of unchanged prevalence of chronic conditions.

Under the Improving Population Health Scenario, LTC expenditure in 2032 would amount to 3.0% of GDP. This compares with 2.7% projected under the constant disability rates assumption. The Continuation of Current Trends Scenario would result in even higher levels of expenditure – 3.3% by 2032.

Conclusions
Making projections about the future of any kind inevitably involves a great deal of uncertainty and, despite best efforts, all past projections will always turn out to have been at least slightly wrong. Choosing the right assumptions about the future levels of care needs is a clearly important aspect of making projections of future LTC expenditure.

This article has reviewed different assumptions made about future disability trends and methods, in the context of increased life expectancy. Recent projections from our epidemiological model in England suggest that assuming constant disability or dementia prevalence rates is an optimistic rather than pessimistic assumption.

Policy-makers using LTC expenditure projections to make decisions need to be aware of quite how much uncertainty there is about future disability rates and that substantial investment in public health and the management of chronic conditions will be required to avoid LTC expenditure growing even faster than expected.

REFERENCES


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