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Cognitive impairment in older people: its implications for future demand for services and costs

Executive Summary

**Adelina Comas-Herrera,
Raphael Wittenberg,
Linda Pickard, Martin Knapp
and MRC-CFAS**

PSSRU Discussion Paper 1728/2
January 2003

The **PERSONAL SOCIAL SERVICES RESEARCH UNIT** undertakes social and health care research, supported mainly by the Department of Health, and focusing particularly on policy research and analysis of equity and efficiency in community care, long-term care and related areas — including services for elderly people, people with mental health problems and children in care. Views expressed in PSSRU publications do not necessarily reflect those of funding organisations. The PSSRU was established at the University of Kent at Canterbury in 1974, and from 1996 it has operated from three branches:

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University of Manchester, Dover Street Building, Oxford Road, Manchester, M13 9PL

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The Alzheimer's Research Trust commissioned a report from the London School of Economics and Political Science investigating the impact that cognitive impairment could have on future long-term care costs in England under a wide range of scenarios.

The following comprises the Executive Summary from the report - copies of the full document can be obtained by emailing enquiries@alzheimers-research.org.uk

Alzheimer's Research Trust, Livanos House, Granhams Rd, Cambridge CB2 5LQ Registered charity no. 1077089

PSSRU Discussion Paper 1728/2

Cognitive impairment in older people: its implications for future demand for services and costs.

Adelina Comas-Herrera¹, Raphael Wittenberg¹, Linda Pickard¹, Martin Knapp¹ and
MRC-CFAS²

January 2003

EXECUTIVE SUMMARY

1. This study aimed to make projections, for the next 30 years, of future numbers of older people with cognitive impairment, their demand for long-term care services and the future costs of their care under a range of specified assumptions. Cognitive impairment is one of the manifestations of dementia. The most common dementia syndrome is Alzheimer's Disease (AD), followed by vascular dementia (Henderson and Jorm, 2000).
2. It also set out to explore the factors that are likely to affect future long-term care expenditure associated with cognitive impairment. These factors include, not only future numbers of older people and future prevalence rates of cognitive impairment, but also trends in household composition, provision of informal care, patterns of care services and the unit costs of care.

Methodology

3. The study involved the development of a model to investigate the impact of cognitive impairment among older people on future long-term care demand and expenditure, and to explore systematically key factors that are likely to affect future long-term care costs of cognitive impairment.
4. The macrosimulation, or cell-based, model developed for this study builds on an earlier long-term care projections model constructed by the Personal Social Services Research Unit (PSSRU) and described in Wittenberg *et al* (1998 and

¹ PSSRU, LSE Health & Social Care, London School of Economics.

² <http://www.mrc-cfas.cam.ac.uk/cfas>

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2001). The earlier model included all dependent older people and did not distinguish between those with cognitive impairment and those with other types of dependency. The new model developed for this study concentrates on cognitive impairment. It uses a range of data, including in particular data from the Medical Research Council's Cognitive Function and Ageing Study (MRC CFAS).

5. The cognitive impairment model consists of three main parts. The first part divides the projected older population into sub-groups, or cells, by age, gender, cognitive impairment and/or functional dependency, household type and housing tenure. The second part of the model focuses on the receipt of long-term care services, by attaching a probability of receiving health and social care services to each cell. The last part of the model is concerned with long-term care expenditures on services for older people with cognitive impairment.

Base case projections

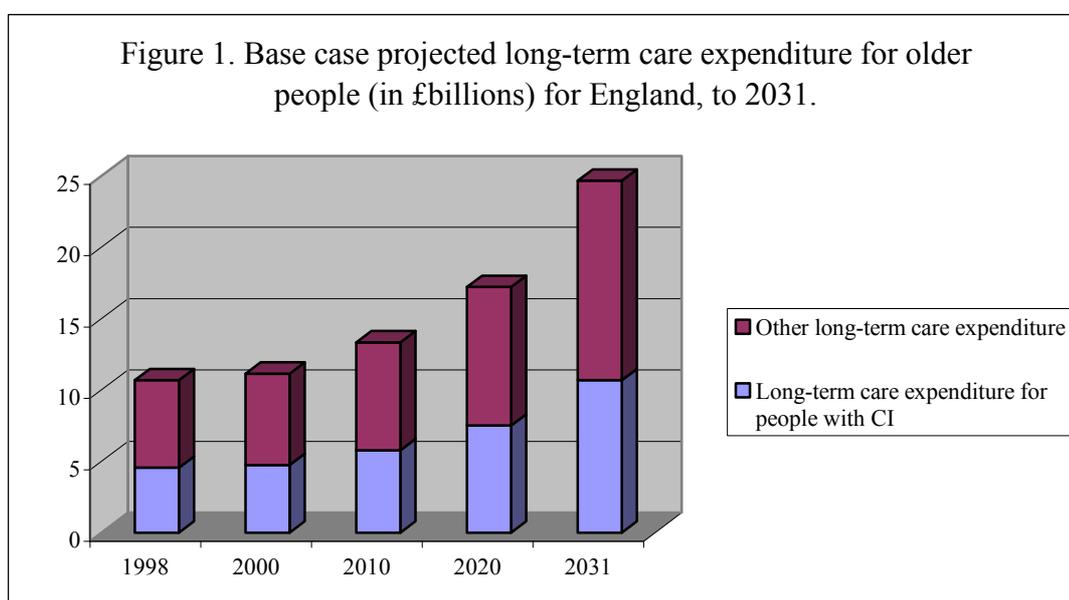
6. The model produces projections under a set of base case assumptions about some of the key factors that will impact on future long-term care expenditure. This base case should be treated as a starting point for examination of the assumptions used in the model, not as a prediction of the future. The base case is a point of comparison when key assumptions are subsequently varied in alternative scenarios. The assumptions that form the base case of the model are summarised in the box below.

MAIN BASE CASE ASSUMPTIONS

- *The older population changes in line with the Government Actuary's Department (GAD) 2000-based principal population projection*
- *Age/gender specific prevalence rates of cognitive impairment and of problems with activities of daily living remain unchanged.*
- *Marital status rates change in line with GAD 1996-based marital status and cohabitation projections.*
- *There is a constant ratio of single people living alone to single people living with others.*
- *The proportion of older people receiving informal care, formal community care services and residential and nursing home care remains constant for each sub-group by age, dependency, household type and other needs-related circumstances.*
- *Social care unit costs rise by 1% per year and health care unit costs by 1.5% per year in real terms.*

7. The model projects that between 1998 and 2031 the numbers of people with cognitive impairment in England will rise from 461,000 to 765,000 (an increase of 66%). Of these 765,000 people, 376,000 would also have problems with activities of daily living. The model also projects that between 1998 and 2031 the numbers of hours of home care arranged by local authorities for older people with cognitive impairment would need to rise by 67% to keep pace with demographic pressures. The numbers of people with cognitive impairment in institutions would need to rise by 63%, from 224,000 in 1998 to 365,000 in 2031, to keep pace with demographic pressures.

8. The numbers of people with cognitive impairment are projected to increase faster between 1998 and 2031 than the numbers of people with functional disability only (66% and 58% respectively). This implies that demand for long-term care will rise at a faster rate among those with cognitive impairment than would be suggested by projections of the overall demand for long-term care. For example, between 1998 and 2031, the number of people with cognitive impairment in institutional care is projected to increase by 63%, compared to a projected 52% increase in the total number of older people in institutions.
9. Expenditure on long-term care services for older people with cognitive impairment in England³ is projected to rise from around £4.6 billion in 1998 to around £10.9 billion in 2031 (figure 1). This amounts to a rise from around 0.61% of Gross Domestic Product⁴ (GDP) in 1998 to around 0.70% of GDP in 2031 (if real GDP grows by 2.25% per year). It is important to recognise that these figures do not comprise the total costs of cognitive impairment and Alzheimer's Disease to society. That would require the inclusion of the costs of a wider range of services to a wider range of public agencies and service users and the opportunity costs of informal care.
10. It has been estimated that people with Alzheimer's Disease represent 72% of the total number of people with cognitive impairment (Ott *et al*, 1995). Assuming that the use of services is the same for those with AD as for those with other types of dementia, the long-term care costs of AD in England would be £3.3 billion in 1998 and would rise to £7.9 billion by 2031.



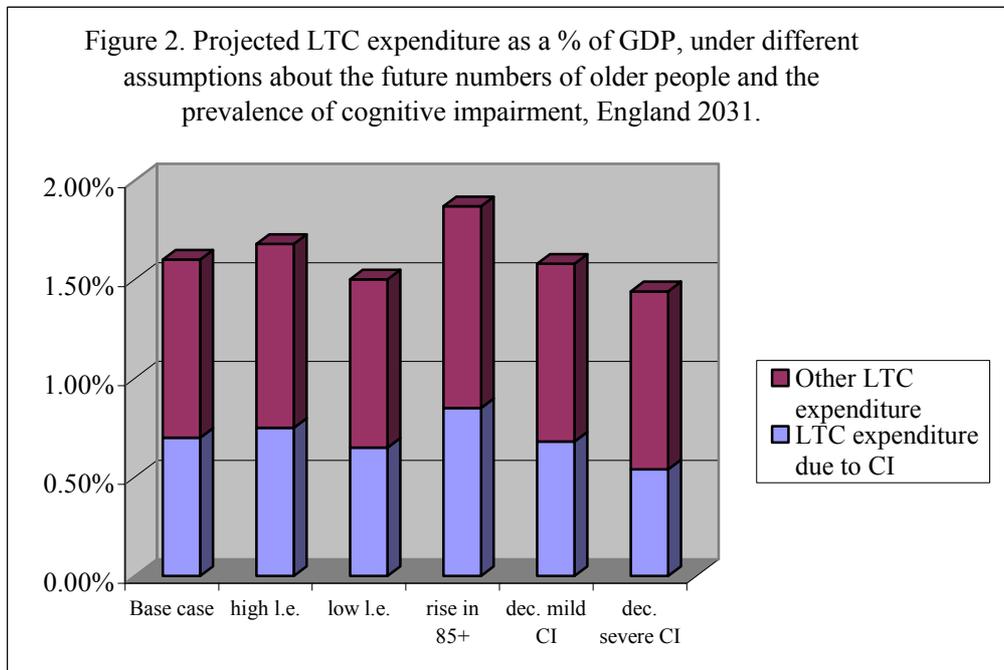
Changes in the future numbers of people with cognitive impairment

11. One of the main factors that will affect the future demand for long-term care for older people and associated expenditure is the future number of older people with

³ In 2000/1 prices, i.e. with expected real increases but not nominal changes in care costs.

⁴ Used as an indication of the wealth of the country.

cognitive impairment. It depends partly on future mortality rates and resultant life expectancy and partly on future prevalence rates of cognitive impairment. The latter may be affected in the future by improvements in the treatment of the causes of dementia such as, for example, new drugs for the treatment of Alzheimer's disease. Figure 2 below shows projected long-term care expenditure in England, in 2031, as a % of GDP under different assumptions, compared to the base case.

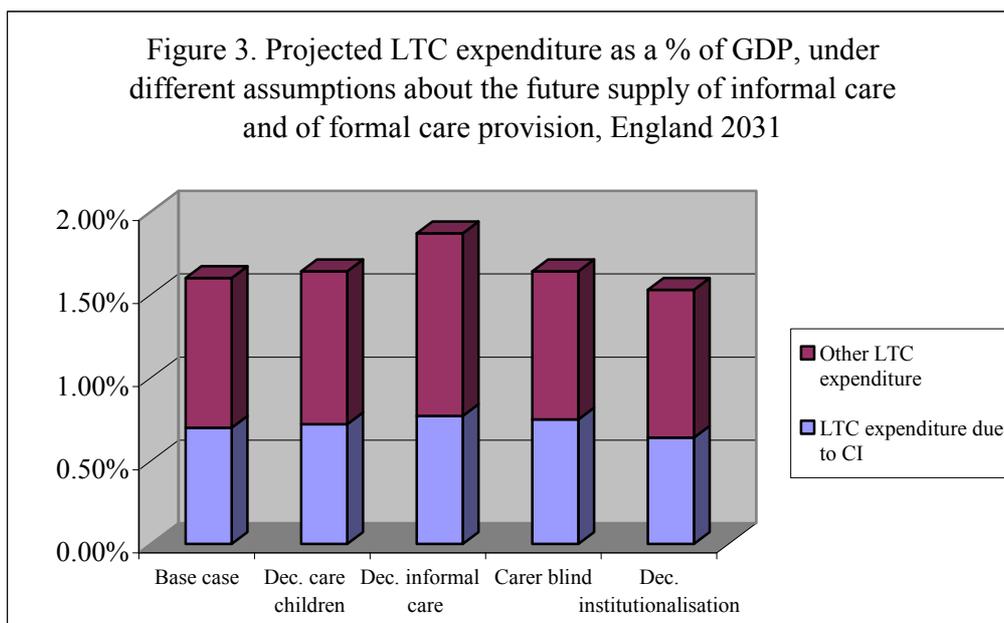


12. The second and third columns in figure 2 show, respectively, the impact of using the high life expectancy and low life expectancy variants to the Government Actuary's Department (GAD) principal population projections. These have a relatively small impact on future long-term care expenditure⁵. The fourth column shows the results of assuming that the numbers of people aged 85 or more will grow 1% per year faster than projected by GAD. This corresponds roughly to the extent of past under-estimation of the numbers of very elderly people in past population projections. The impact of this assumption is rather greater.
13. The fifth column shows the impact of a decline of 1% per year in the prevalence of mild cognitive impairment, and the last column shows the impact of a decline of 1% per year in the prevalence of moderate to severe cognitive impairment. This latter assumption aims at illustrating the possible impact of a delay in the progression of cognitive impairment to the more severe stages. In terms of long-term care expenditure as a % of GDP, a decline in the prevalence of moderate to severe cognitive impairment of this magnitude could broadly offset the impact of the expected increase in the overall numbers of older people between 1998 and 2031, by leaving long-term care expenditure as a % of GDP unchanged at 1.44%.

⁵ Due to the relatively narrow range of life expectancy at birth assumptions explored in these variant population projections.

Changes in the availability of informal care and in patterns of formal care

14. Demand for long-term care will depend partly on the availability of informal care by family and friends. Figure 3 below shows projected long-term care expenditure in England in 2031 as a % of GDP under different assumptions about informal care, compared to the base case. It also shows projected expenditure under different patterns of formal care.
15. There is considerable uncertainty about the future supply of informal care. The model takes into account the effects of changes in marital status on informal care/household composition in the future. Whereas there is likely to be an increase in spouse carers of dependent older people in future years, there is much more uncertainty about the future provision of intensive informal care by children. The second column in figure 3 shows the impact of a hypothetical decline by one third in the proportion of single dependent older people living with others by 2031. It assumes that the older people who no longer move in with their children move into residential homes instead. The impact of this assumption is slight.
16. The third column shows a potential impact of a more substantial fall in the supply of informal care. In this case it is assumed that, as a result of a substantial fall in the supply of informal care, those who are currently living with others have the same probability of going into an institution as those who live alone. In other words, the probability of admissions to institutions increases not just for single dependent older people living with others but for married couples and married couples living with others as well. The impact of this assumption is more substantial. Expenditure on long-term care for those with cognitive impairment is projected to represent around 0.77% of GDP in 2031 under this scenario, compared with 0.70% under the base case.



17. There may also be changes affecting patterns of formal care in future years. The fourth column in figure 3 shows the impact of an increase in formal support

provided to carers in future years, which would be in line with current policies. This assumption investigates the implications of giving to older people with moderate to severe cognitive impairment who live with others the same packages of non-residential services as received by those living alone (a 'carer-blind' assumption). The impact of this assumption is modest.

18. Finally, also in line with government policy, the fifth column shows the impact of a shift of the balance of care from institutional to domiciliary care. This assumption investigates the impact of reducing the numbers of people with moderate to severe cognitive impairment in residential and nursing home care so that, by 2020, 10% fewer people with moderate to severe cognitive impairment would be in institutions than would otherwise have been the case. Those in the community who would otherwise have been in an institution would receive 16 hours of home care and 3 district nurse visits per week. The impact of this assumption on projected long-term care expenditure is slight.

Changes in the future unit costs of care

19. Expenditure projections over an extended period of time are inevitably sensitive to assumptions about real rises in the unit costs of care. The first variant assumption examined was that there would no be real rise in unit costs. This is an improbable assumption, but is a useful indicator of the projected rise in expenditure in pure volume terms. Under this assumption, by 2031, long-term care expenditure for people with cognitive impairment would represent 0.50% of GDP, compared to 0.70% under the base case (in which the unit costs of care rise broadly in line with rises in input pay and prices observed in the last 15 years).
20. The second assumption was that real unit costs would rise in line with the expected rise in earnings, by 2% per year. Under this assumption, by 2031, long-term care expenditure for people with cognitive impairment would represent 0.92% of GDP, compared to 0.70% under the base case. This shows that projected future expenditure on long-term care for older people with cognitive impairment is highly sensitive to the assumed rate of growth of real unit costs.

Conclusions

21. The results of the model show that, unless more effective treatments for cognitive impairment are developed and made widely available, the numbers of older people with cognitive impairment will rise significantly over the next 30 years. This means that substantial rises in formal services will be required. The implication is that there is a need to develop, and make widely available, better treatments to slow down the progressive decline associated with dementia.
22. It should be stressed that *the PSSRU model does not make forecasts about the future*. It makes projections on the basis of specific assumptions about future trends. The approach involves simulating the impact on demand of specified changes in demand drivers, such as demographic pressures, changes in household composition, or specified changes in patterns of care, such as more support for

informal carers. It does not involve forecasting future policies or future patterns of care.

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