

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

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Paper presented at the Health Economists Study Group meeting, 9-11th July 2003, University of Kent, Canterbury.

Introduction

The numbers of people reaching old age have increased substantially in recent years and are projected to keep growing in the coming decades. With the increase in the numbers of older people, the numbers of people with cognitive impairment are expected to rise as well, generating an increase in the future demand for services and, as a result, increased costs.

Cognitive impairment (defined here as one of the manifestations of dementia) has a substantial impact on the quality of life of people affected, their families and other caregivers. Cognitive impairment also has major health service and social care implications, in turn generating high costs. It is important, for purposes of planning services, to have projections of likely future service requirements for people with cognitive impairment. It is also important, in the context of debates about how best to fund long-term care and the future affordability of public expenditure, to have projections of long-term care expenditure.

Long-term care includes help with domestic tasks, such as shopping and preparing meals, and assistance with personal care tasks, such as dressing and bathing. Most long-term care for older people living at home is currently provided by informal carers. Formal services are provided by a range of agencies including local authority social services, community health services and independent sector residential care, nursing homes and home care services. Long-term care services are financed by the National Health Service, local authorities and by older people themselves.

Previous projections of the future costs of cognitive impairment and dementia in Britain (McNamee et al 2001, Bosanquet et al 1998 and Lowin et al 2001) have been based on demographic models. Demographic models work by assigning expenditure profiles to the projected future numbers of people with cognitive impairment. However, there are important factors other than demographic trends and future prevalence of cognitive impairment that will affect future demand for services and associated expenditure. Future demand and expenditure on services will also depend on the future availability of informal care, on policies concerning services, and on the relative unit cost of services.

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The MRC CFA study is supported by major awards from the Medical Research Council and the Department of Health. We would like to acknowledge the essential contribution of Family Health Authorities, local general practitioners, interviewers and interviewees for their participation in the study.

This paper presents 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. The study involved the development of a macrosimulation, or cell-based, model to investigate the impact of cognitive impairment on long-term care demand and expenditure, and to explore systematically the factors that will affect future long-term care costs of cognitive impairment. These factors include, not only the 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.

This cognitive impairment model is based on the PSSRU long-term care projections model. That earlier model was constructed as part of a project on long-term care finance funded by the Department of Health. A variant that could produce projections for the United Kingdom to 2051 was developed and used to provide projections for the Royal Commission on Long-Term Care (1999). The model has also been used to provide projections for the HM Treasury Health Trends Review (Wanless, 2002) and for the Institute of Public Policy Research (Wittenberg *et al*, 2002 and Hancock *et al*, forthcoming). A full account of the long-term care projections model and of the data and assumptions used can be found in Wittenberg *et al* (1998, 2001, 2002).

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 presented here concentrates on cognitive impairment.

Data sources

The model uses data from a wide range of sources, including Department of Health, Government Actuary's Department and other official data; data from the MRC Cognitive Function and Aging Study (CFAS); data from the General Household Survey for 1998/9; and data from a PSSRU survey of residential care for older people.

The model uses the Government Actuary's Department's (GAD, 2001) 2000-based projections of the numbers of older people in England to 2031 by age band and gender and GAD's 1996-based marital status and cohabitation projections to 2020 (Shaw 1999, Shaw and Haskey 1999).

A key source of data for this version of the model was the Medical Research Council's Cognitive Function and Ageing Study (MRC CFAS), which aimed to collect information about the incidence and prevalence of cognitive decline and dementia (MRC CFAS, 1998a). It also aimed to identify factors associated with the risk of dementia and to evaluate the degree of disability associated with cognitive decline and the service needs this disability generates. The MRC CFAS study found no heterogeneity between the different sites, which leads their authors to suggest that their prevalence estimates can be generalised (MRC CFAS, 1998a). In four of the MRC CFAS sites (Cambridgeshire, Nottingham, Newcastle and Oxford) the resource implications of functional or cognitive frailty were investigated in the Resource Implication Study (RIS) (McNamee *et al*, 1999 and 2001). The model uses data on the prevalence of cognitive and functional frailty from the four sites involved in the RI Study, as described in Melzer *et al*, (1999). The size of the sample for these four sites was 10,377 people aged 65 and over. Of these, 1,446 were

classified as disabled and, of these, the RIS collected service monitoring data on 1,391 people.

The model also uses data from the 1998/9 General Household Survey (GHS). The 1998/9 GHS included a sample of around 3,082 people aged 65 and over living in private households in Great Britain. Of these, 3,073 provided information on their ability to perform tasks and on their use of community care services (Bridgwood, 2000). The model uses GHS data on household type, housing tenure, functional dependency, receipt of informal help with domestic tasks and receipt of formal non-residential services.

For those in institutions the model uses data from the Department of Health on the numbers of older people in residential homes, nursing homes and on the numbers of older long-stay hospital patients (Department of Health, 2000). The model also uses data on the age, gender, cognitive impairment, previous household type and previous housing tenure of care home residents from the PSSRU residential care studies (Netten *et al*, 1998 and 2001a).

Finally, information from the PSSRU Study of Unit Costs (Netten *et al*, 2001b) and from Laing and Buisson (2001), is used in order to cost each of the services.

Methodology and model design

Overview of the model

The PSSRU cognitive impairment projections model aims to make projections for England to 2031 of three key variables: the expected number of older people with cognitive impairment, their likely level of demand for long-term care services and the costs associated with meeting this demand.

The 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 long-term care services to each cell. The last part of the model is concerned with long-term care expenditures on services.

The model has been developed to make projections of likely demand for long-term care for older people with cognitive impairment under different scenarios. 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.

Projected numbers of older people with cognitive impairment

The first part of the model classifies the projected numbers of older people into subgroups, according to age bands, gender, dependency and other key characteristics. The

model uses the GAD 2000-based population projections as the basis for the numbers of people by three age bands and gender in each year under consideration until 2031.

Table 1 England population aged 65 and over: 1998 and projection for 2031

	1998	2031	% increase
Males			
65-74	1,913,000	3,244,000	61%
75-84	1,045,000	1,887,000	81%
85 & over	254,000	679,000	67%
Females			
65-74	2,214,000	3,366,000	52%
75-84	1,649,000	2,283,000	38%
85 & over	704,000	1,050,000	49%
All 65 & over	7,779,000	12,510,000	61%

Source: ONS mid-1998 population estimates and GAD 2000-based population projections

Dependency

The numbers of older people by age and gender are split into those with cognitive impairment only, those with combined cognitive impairment and functional disability (defined as the ability to perform activities of daily living), those with functional disability only and those with neither cognitive impairment nor functional disability. The model uses for this purpose data on prevalence from the four sites involved in the CFAS Resource Implications Study, as described in Melzer *et al* (1999). People were classified as disabled in this study if they were identified as functionally³ or cognitively frail. People were considered to be cognitively impaired as assessed by a score of three or more on the Automated Geriatric Examination Computer Assisted Taxonomy (AGECAT) (Copeland *et al* 1986). They were considered to have functional disability if they had a score of seven or less on the modified Townsend Disability Scale (MRC CFAS, 1998b). Table 2 presents the prevalence estimates used in the model.

Table 2 Estimated prevalence of cognitive impairment and/or functionally disability among older people in England and Wales, by age group, sex, and type of disability, in percentages:

	65-74		75-84		85 or more		All 65 and over	
	Men	Women	Men	Women	Men	Women	Men	Women
Functional only	3.31	5.03	7.69	14.84	17.27	32.18	5.70	12.54
Cognitive only	1.56	1.20	4.22	3.29	8.03	8.46	2.88	3.01
Combined	0.68	0.45	2.44	3.29	10.84	13.73	2.02	3.42
All with cognitive imp.	2.24	1.65	6.66	6.58	18.87	22.19	4.90	6.43

Source: Melzer *et al*, 1999 and personal communication from B. McWilliams, from the MRC CFAS team.

A group of people who, because of their advanced cognitive impairment, were not able to answer the activities of daily living (ADL) questions have been included in the combined dependency group, following Melzer *et al* (1999).

Household type and informal care

The older population by age, gender and disability is then divided into household type/informal care groups. Household type is an important structural correlate of informal

³ In the study of Melzer and others (1999), having difficulties with activities of daily living was referred to as having “physical” frailty. In this report we refer to “functional” dependency, as the difficulty or inability to perform activities of daily living can also be a consequence of severe cognitive impairment.

care (Pickard *et al*, 2000). Informal care is combined with household composition in a four-fold classification: living alone without informal help; living alone with informal help; single, widowed or divorced (*de facto* single) living with others; and married/cohabiting couple (including couples living with others). Household types where older people live with others have not been broken down between those with and without informal carers because all older people living with others have a potential carer and most of those who are dependent have an actual carer. In the 1998/9 General Household Survey (GHS), over 90% of dependent older people living with others reported receiving informal help with domestic tasks.

The 1998 population by age and gender was split into *de facto* single or living as a couple using 1999 ONS data on marital status and, for those in institutions, 1991 Census data. For future years, the trends in marital status in the model are driven by the 1996-based GAD marital status and cohabitation projections (Shaw 1999, Shaw and Haskey 1999).

The *de facto* single group are broken down according to whether they were living alone or living with others. 1998 GHS data was used for those who had no cognitive or functional disability. Analysis of the RIS CFAS data set showed that, for those with cognitive or functional disability, the propensity to live alone was significantly different according to whether people had only one form of disability (74%) or had combined cognitive and functional dependency (61%). Although CFAS data was used for those with dependency, the CFAS proportions were adjusted so that the total proportion of older people living alone matched that observed in the 1998 GHS (as the 1998 GHS data are more recent than CFAS data).

For those who lived alone and were dependent, analysis of the RIS CFAS dataset showed that the probability of receiving informal care also differs significantly according to the type of dependency. The proportion of people living alone who received informal care was 52% among those with cognitive impairment only, 64% among those with functional impairment only, and 77% among those with combined cognitive and functional impairment. These proportions from the RIS CFAS dataset are used to divide those with cognitive impairment and/or functional impairment who live alone by whether they receive informal care or not. For those not classified as having cognitive impairment or functional impairment, GHS data are used.

For future years, the projections assume that the proportion of single people living alone without informal help, living alone with informal help and living with others remains constant over time by age, gender and dependency group.

Housing tenure

The model includes, for those living in private households, a simple breakdown by housing tenure, between those living in owner-occupied tenure and those living in rented accommodation. One reason for the inclusion of housing tenure is that it can be regarded as a simple proxy for socio-economic group. Another is that it is relevant, in the case of older people living alone, to the division between those who fund their own residential or nursing home care and those who are funded by their local authority or health authority. Older home-owners who live alone generally need to fund their residential or nursing home care privately, while older tenants and older home-owners living with their spouse are often eligible for public funding.

The proportions of older people, by age band and household type, living in owner-occupier and in rented tenure were derived by analysis of 1998/9 GHS data. The use of this relatively recent GHS data seemed reasonable as an analysis of the RIS CFAS data showed no statistically significant difference in housing tenure between those with cognitive impairment and those with functional disability. The projections assume that the proportion of older people, by age band and household type, living in owner-occupier tenure rises in line with housing tenure projections by the Anchor Housing Trust (Forrest *et al*, 1996).

Projected amounts of services demanded

The second part of the model is concerned with projections of the volumes of services demanded. The output of the first part of the model (the projected numbers of older people by dependency, household type/informal care and other characteristics) was combined with functions that assign receipt of services to each sub-group of the older population.

The model includes key formal non-residential social services, such as home care, day care and meals. It also includes key non-residential health services, such as day hospital care, community nursing and chiropody. Private domestic help is also included, though this should be treated with caution as it may not relate to care needs. Residential care, nursing home care and long-stay hospital care are also included.

It did not seem appropriate to make direct use of the CFAS RIS data to investigate the proportion of older people with cognitive impairment and/or functional disability receiving different services. One reason was that the RIS data was collected in just four areas whose pattern of service receipt may not be typical of the national pattern. McNamee *et al* (1999) found that the costs of formal services differed by area. A further reason was that, since the period 1991 to 1995 when the RIS data was collected, there have been substantial changes in the patterns of service receipt (Pickard *et al*, 2001).

For non-residential services 1998/9 GHS data and RIS CFAS data were used. First, the probability of receipt of each of these services was estimated through multivariate (logistic regression) analysis of the GHS data. The independent variables were age, gender, level of functional dependency, household type/informal care and housing tenure. The fitted values from the analysis were then applied to the population in each cell by age, gender etc to produce an estimate of the overall numbers of older people receiving each service by age group, gender, functional dependency, household type/informal care and housing tenure.

RIS CFAS data were used to investigate, for the recipients of each service, the proportions of service recipients in each disability group (cognitive impairment and/or functional dependency). This analysis was conducted by age and gender⁴. Table 3 shows, for each age group and gender, the proportionate breakdown of recipients of non-residential services⁵ by type of dependency. Most of the recipients of services belong to

⁴ For the users of each service, logistic regression analysis was conducted using as the dependent variable whether the person had cognitive impairment. Explanatory variables were age, gender, household type/informal care and housing tenure. For most services the proportion of service recipients in the RIS data with cognitive impairment was found to vary with age and gender but not with the other variables.

⁵ Home care, day care, community nursing, meals or private domestic help.

the group with functional dependency only. This reflects the higher prevalence of functional dependency (see table 2).

Table 3. Percentage of dependent people who use non-residential services, by type of dependency.

	CI only	ADL only	Combined
Male			
65-74	13%	72%	15%
75-84	22%	58%	20%
85+	20%	51%	29%
Female			
65-74	7%	85%	8%
75-84	11%	74%	15%
85+	10%	69%	21%

Source: Analysis of the RIS-CFAS dataset

The overall estimated numbers of service recipients with functional dependency from the 1998 GHS were then divided between those with functional dependency only and those with both cognitive impairment and functional dependency using the analysis of the RIS data described above. Similarly, estimated overall numbers of service recipients without functional dependency were divided between those with cognitive impairment and those without cognitive impairment using RIS data.

The intensity with which services were received, i.e. hours or visits per client week, was also investigated using both GHS and RIS data. Analysis of RIS data showed that the average weekly receipt of each community-based service did not differ significantly between those with cognitive impairment only, those with cognitive impairment and functional disability, and those with functional disability only. The one exception was district nursing: it was found that those with functional impairment only were receiving significantly higher average number of weekly visits than those with cognitive impairment only. GHS data on intensity of service receipt was, therefore, used for all categories of service recipients, with an adjustment in the case of district nursing services.

For residential, nursing home and long-stay hospital care, the total numbers of older service recipients were obtained from official national statistics (Department of Health, 2000). The totals were broken down by gender, age band, household type before admission and housing tenure before admission, on the basis of information from the PSSRU 1996 survey of residential care (Netten *et al*, 1998). They were also divided between those with cognitive impairment only, those with functional impairment only and those with both, using an analysis of the RIS data. Account was taken of the PSSRU survey finding that, at the time of admission to residential care, people with severe cognitive impairment were more likely to be still married and living with others compared to those with no cognitive impairment (Netten *et al*, 2001a). This approach enabled the proportion of older people in residential, nursing home and long-stay hospital care to be estimated by age band, gender, type of disability and previous household type. Table 4 shows, as an example, the probability for someone in the age group 75-84 to be in an institution, depending on their gender, household type and type of dependency.

Table 4. Probability of being in an institution for people aged 75 to 84, by gender, household type and dependency group.

		Probability of being in an institution		
		CI only	ADL only	Combined
75-84 male	Alone	27%	38%	73%
	With others	37%	49%	72%
	Married	8%	7%	38%
75-84 female	Alone	9%	26%	87%
	With others	13%	36%	86%
	Married	4%	3%	74%

Source: PSSRU CI LTC model estimates (using MRC CFAS data).

Table 5 shows the estimated proportions of older people in different forms of institutional care and in different household types in the community, by type of disability. Of those with cognitive impairment only, 88% live in the community, compared to 75% of the functional impairment only group, and 15% of the group with combined dependency.

Table 5. Distribution of the population 65 and over by household type within dependency groups, England, 1998

	No dep.	CI only	ADL only	Combined
Alone without informal carer	28%	21%	14%	1%
Alone with informal carer	9%	22%	25%	4%
Single with others	6%	7%	7%	2%
Couple	56%	38%	29%	8%
All in community	100%	88%	75%	15%
Residential home		7%	15%	51%
Nursing home		4%	9%	30%
Hospital		1%	2%	4%
All in institutions	0%	12%	25%	85%
All by dependency	6,547,795	234,480	769,715	227,009

Source: derived from analyses of 1998 GHS, Department of Health, PSSRU and CFAS RIS data.

The estimated proportion of each sub-group of the older population by age, gender, household type, type of disability and housing tenure who received each service was then held constant for future years⁶. This means that the projections are based on recent patterns of care for older people, except where changes in the pattern of care are specifically investigated.

Projected aggregate expenditure on long-term care services

The third part of the model projects total expenditure on the formal services demanded. It covers the costs to the health service, social services and users of services, for those long-term care services included in the model.

A key input is the unit costs of care, for which information has been drawn from a PSSRU study (Netten *et al*, 2001b) and from Laing and Buisson (2001). The other input is the projected levels of services demanded as estimated in the second part of the model.

⁶ As there has been a decline in the number of older people in institutions between 1998 and 2000, the model has reflected this change.

Estimated expenditure on home care and community nursing services has been grossed up broadly to match official data. Separate expenditure projections were produced for services for older people with cognitive impairment and services for older people without cognitive impairment.

Projections for future years need to take account of expected rises in the real unit costs of care, such as the cost of an hour's home care. Real unit costs are likely to be affected by a number of factors, including future real wages and other input prices, efficiency and quality of care. As long-term care services are highly labour-intensive, future real wages are probably the key factor. It is assumed, as a base case, that real unit costs of health care will rise by 1.5% per year and of social care by 1% per year. This reflects trend rises in real input prices, i.e. health care and social care pay and prices.

Results

Base case assumptions and projections

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.*
- *The supply of formal care will adjust to match demand⁷ and demand will be no more constrained by supply in the future than in the base year.*

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

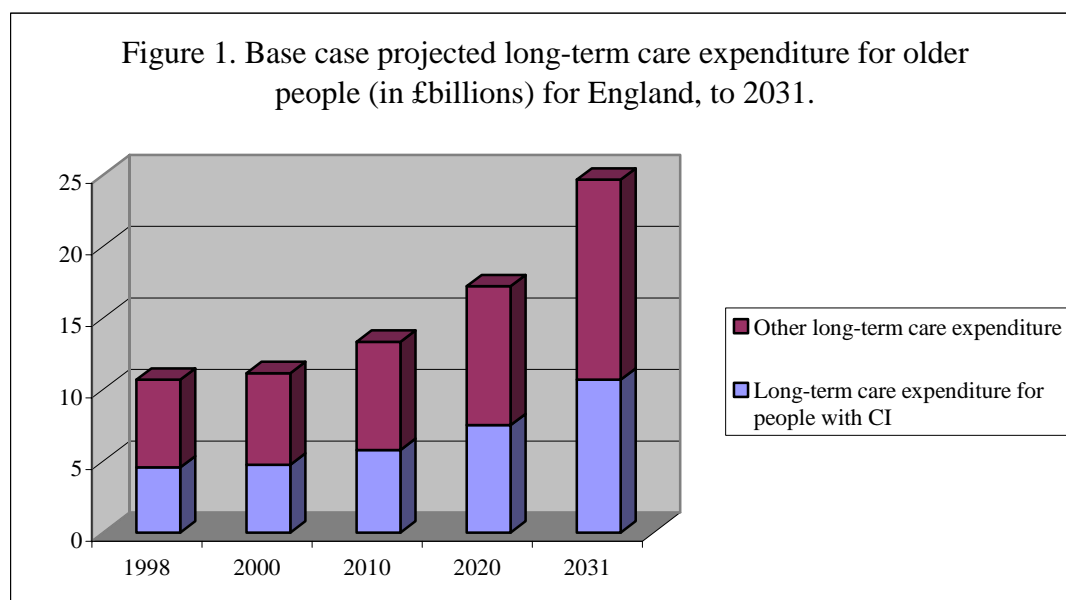
⁷ The model effectively assumes that the assumed real rise in the unit costs of care will be adequate to ensure that supply is sufficient to meet demand.

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.

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.

Expenditure on long-term care services for older people with cognitive impairment in England⁸ 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 Product⁹ (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 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.

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.



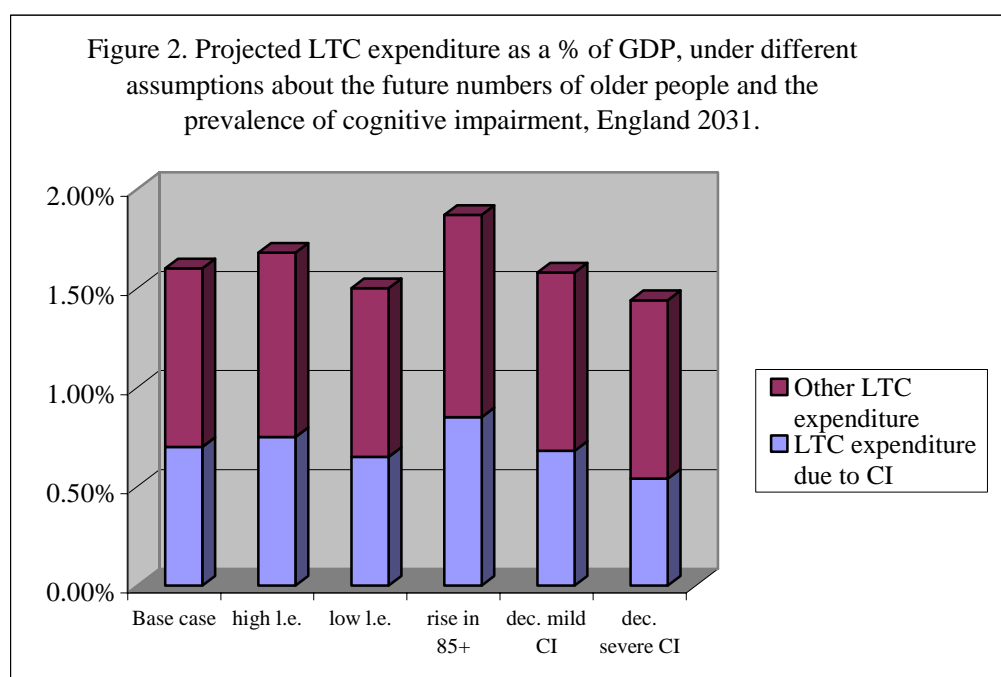
⁸ In 2000/1 prices, i.e. with expected real increases but not nominal changes in care costs.

⁹ Used as an indication of economy’s capacity to meet expenditure.

Sensitivity analysis

Changes in the future numbers of people with cognitive impairment

One of the main factors that will affect future demand for long-term care for older people and associated expenditure is the future number of older people with 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 shows projected long-term care expenditure in England, in 2031, as a % of GDP under different assumptions, compared to the base case.



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 expenditure¹⁰. 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 (Shaw, 1994). The impact of this assumption is rather greater.

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

¹⁰ Due to the relatively narrow range of life expectancy at birth assumptions explored in these variant population projections.

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 total long-term care expenditure as a % of GDP unchanged at 1.44%.

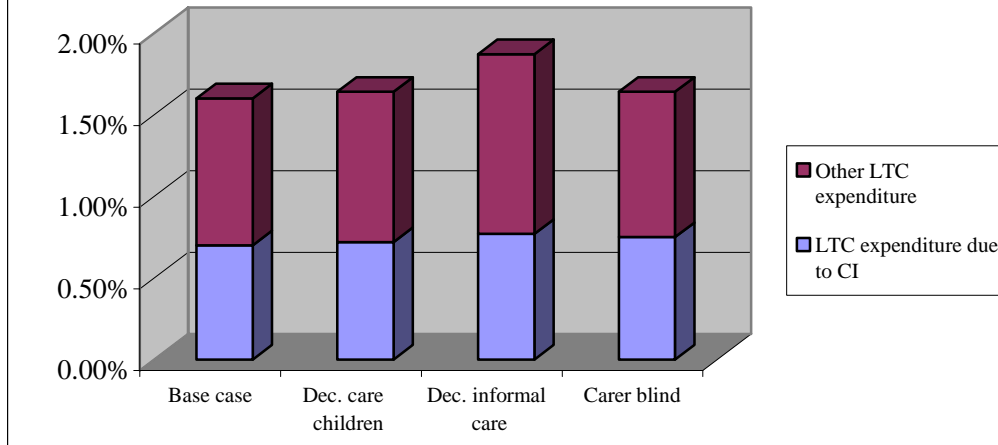
Changes in the availability of informal care and in patterns of formal care

Demand for long-term care will depend partly on the availability of informal care by family and friends. Figure 3 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.

There is considerable uncertainty about the future supply of informal care. A decline has been anticipated for a number of reasons, including changes in the structure and size of the family, increased geographical mobility in the working population, retirement migration and increased economic activity by women (RIS MRC CFAS, 1998). 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.

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. A decline in informal care provided to older people living with others, so that their probability of admission to residential care was the same as that of older people living alone, would add around a billion pounds to long-term care expenditure on older people with cognitive impairment by 2031. 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.

Figure 3. Projected LTC expenditure as a % of GDP, under different assumptions about the future supply of informal care and of formal care provision, England 2031



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 to support informal carers. 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.

Changes in the future unit costs of care

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).

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.

Discussion

Key limitations

As no single recent source of data contained all the necessary information for this study, it has used data from a number of different sources. As some of the data used covered different populations and were collected at different points of time, there are issues of comparability. An important part of this study has been devoted to investigating how best to use each available source of data and to combine the information available from each of them.

The CFAS RIS Study provides a very valuable source of information about the characteristics and service utilisation of dependent older people. In comparison with the General Household Survey and other available surveys, it provides a larger sample of dependent older people. It uses a well-recognised measure of cognitive impairment, records the use of services in detail and covers older people living in households and older people in institutions. A more up-to-date survey of the same quality would be a valuable tool for further research on the implications of cognitive impairment for demand for services and associated expenditure.

It is important to note that the expenditure projections produced by this study do not constitute the total costs of cognitive impairment to society. That would require 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. Inclusion of the latter would present considerable problems, as there is much scope for debate about the best method for estimating the opportunity costs of informal care (McDaid, 2001).

It should also be stressed that no allowance has been made here for changes in public expectations about the quality, range or level of care. The base case projections presented here assume an unchanged relationship between age, gender, dependency, household type and housing tenure and receipt of care. Rising expectations, associated with rising real pensioner incomes, could clearly have a substantial impact on future demand for long-term care. Indeed, they could have a larger impact than demographic changes. Yet, it would be difficult to speculate usefully on their potential impact.

Social and policy implications

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 model also shows that, if current or future treatments were to have the effect of reducing prevalence rates of the more severe stages of cognitive impairment by 1% per year, this would broadly offset expected demographic pressures from rising numbers of older people. The implication is that there is a need to develop, and make widely available, better treatments to slow down the progressive decline of dementia.

The model projects that the numbers of older people with cognitive impairment will rise faster than the numbers of older people with physical dependency between 1998 and 2031, for example, 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. This has implications for the planning of specialist

dementia services, as advocated by the recent National Service Framework for older people (Department of Health, 2001).

Much of the care for older people with cognitive impairment living at home is provided by their families and other informal carers. No attempt has been made here to make an estimate of the value of informal care provided to older people with cognitive impairment nor to make projections of the value of informal care in future years. The model does, however, allow for projections to be made of the expenditure implications of a possible decline in informal care in the future. Projections presented here suggest that a decline in the supply of informal care provided to older people with cognitive impairment, resulting in increased admissions to residential care, could have substantial financial consequences. This highlights the importance of services to support informal care.

The provision of informal care to older people with cognitive impairment could be positively affected by more effective treatments for cognitive impairment. Treatments that delay the progression of the disease could result in a delay in the need for institutional care and enable older people to be cared for at home, by both informal and formal supports, for longer. The need for support for informal carers in these circumstances would be essential. The National Service Framework for older people recognises the importance of providing support to informal carers of people with dementia, stressing the need for information, advice and practical help to support them in caring for the older person (Department of Health, 2001). The results reported here have looked at the future financial consequences of providing more support for carers of older people with cognitive impairment, in the form of domiciliary services provided on a 'carer-blind' basis. These results suggest that the financial consequences of providing support for carers on this basis would be lower than the costs of a decline in informal care that resulted in increased institutionalisation. The delay or prevention of institutional care for older people with cognitive impairment may be the consequence not just of improved treatments for dementia but also of the successful implementation of long-standing government policies.

The importance of the results of the sensitivity analysis lies in the fact that it is beyond the present state of knowledge to set probabilities for future trends in the factors examined here. Yet it is important for policy and planning purposes to demonstrate the extent of sensitivity of future long-term care expenditures to assumptions about these trends. The findings suggest that policy-makers need to plan for uncertainty in future demand for long-term care for people with cognitive impairment. Future mortality and prevalence rates and rises in unit care costs, which are inevitably uncertain, have substantial implications for future demand for long-term care and associated expenditure.

Acknowledgments

The research on which this paper is based was financed by the Alzheimer's Research Trust. It builds on the PSSRU long-term care projections model, which forms part of the Personal Social Services Research Unit's long-term programme, financed by the Department of Health.

This study used data from the Medical Research Council's Cognitive Function and Ageing Study. The MRC CFAS study is supported by major awards from the Medical Research Council and the Department of Health. We would like to acknowledge the essential contribution of Family Health Authorities, local general practitioners, interviewers and interviewees for their participation in the CFAS study.

Responsibility for any errors and all views in this article lies with the authors. The article does not purport to represent the views of the Department of Health, the Alzheimer's Research Trust or the Medical Research Council.

The assistance of the Government Actuary's Department in providing the population projections is gratefully acknowledged.

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