

# Formal home care utilisation by older adults in Ireland: Evidence from the Irish Longitudinal Study on Ageing

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## Abstract

The aim of this study is to provide a population based estimate of the utilisation of publicly financed formal home care by older adults in Ireland and to identify the principal characteristics of those utilising formal home care. Data were collected through computer-aided personal interviews from a representative sample of community living older adults in Ireland. The interviews were conducted between 2009 and 2011 as part of the first wave of the Irish Longitudinal Study on Ageing (TILDA). The study is cross-sectional in design and limited to participants aged 65 years and older (n=3507). Results reveal that 8.2% (95% CI 7.1%-9.3%) of participants utilised publicly financed formal home care in the form of home help and/or personal care. Key determinants of formal home care utilisation were Instrumental Activity of Daily Living (IADL) difficulty (Adj OR 3.8, 95% CI 2.7-5.3), older age (Adj OR 3.4, 95% CI 2.4-4.8) and living alone (Adj OR 2.6, 95% CI 1.9-3.8). Almost half of those utilising formal care did not self-report an Activity of Daily Living (ADL) difficulty or an Instrumental Activity of Daily Living (IADL) difficulty. Government policy aims to reduce the need for long-term residential care by providing formal home care for older adults with low to moderate levels of dependency. This requires an increasing emphasis on personal care provision in the home. No evidence was found in this study to suggest that a shift in emphasis from formal domestic to personal care is taking place in Ireland. The absence of standardised assessment and eligibility criteria are deemed to be barriers to reorientation of the system. From a health services perspective the current situation is not sustainable into the future and requires a focused policy response.

**Key Words:** Home care, formal care, older adults, social care.

### **What is known about this topic**

- There is no statutory entitlement to formal home care in Ireland
- Access and eligibility criteria vary across health service regions
- The ability to compare the characteristics of home care recipients across Ireland is limited by the absence of standardised assessment instruments and standardised data collection

### **What this paper adds**

- It provides a population based estimate of formal home care utilisation by older adults in Ireland
- The findings suggest an emphasis on support for Instrumental Activities of Daily Living (IADL) difficulties as opposed to Activities of Daily Living (ADL) difficulties
- Older adults without self-reported IADL and or ADL difficulties are currently utilising formal home care; service use in this group requires further investigation

## **Introduction**

The majority of older people are independent and self-caring. A small proportion requires long-term care, which may be provided at home in the community, or in residential care settings. Home care may be provided by unpaid family members and friends (informal care) or by paid or professional carers (formal care). This paper will focus on publicly financed formal home care services in the Republic of Ireland.

Throughout the world, the majority of home care that older people receive is provided informally by family, friends and neighbours, usually to the extent of at least 80% of total hours of care provided (OECD, 2005). Recent evidence, based on community living disabled older adults from the Irish Longitudinal Study on Ageing (TILDA), suggests that this percentage is closer to 90% in Ireland (Kamiya et al., 2012). Formal care therefore comprises a small component of overall home care. Although the State and non-profit organisations have traditionally provided the bulk of formal care, an increasing share of such care is now provided by private for-profit organisations which have rapidly increased in number in Ireland in the last decade (Timonen et al., 2006, Timonen & Doyle, 2007, Brady, 2010). However, despite the increased range of service providers, the vast majority (97%) of formal care continues to be financed by the Irish State (PA Consulting Group, 2010).

The main component of the State's home care provision is the home help service which commenced in 1972. It is primarily aimed at older people who need additional support to remain living in their own homes. The Health Service Executive (HSE) provides this service under Section 61 of the 1970 Health Act, which states that "A health board may make arrangements to assist in the maintenance at home of a sick or infirm person or a dependant of such a person." As the Act states "may", there is no legal obligation on the HSE to provide this service and it is therefore discretionary (Health Service Executive, 2008). Home help (hereafter referred to as domestic help) typically includes assistance with household cleaning, laundry, shopping and meal preparation.

The other main component of the State financed provision is the personal care service. This service employs care assistants to provide care intimate to the body, for example dressing, bathing, toileting, assisting into or out of bed and assistance with eating. Domestic help and personal care may be provided by one carer, thus ensuring continuity of care or these services may be provided by multiple carers. An enhanced level of care in the form of individually tailored multidisciplinary home care packages is provided to older people when the basic domestic help or personal care services are not sufficient to meet their needs. The first State funding for these "home care packages" was provided in 2006 (National Economic and Social Council, 2012) .

Evidence of the distribution of home care utilisation in Ireland comes mainly from service estimates provided by the HSE. These estimates indicate that almost 46,000 people aged 65 years and older received home care and almost 9,500 others received a home care package at the end of 2010 (Health Service Executive, 2011).

Regional population based studies have consistently found lower levels of service utilisation than those emanating from corresponding health service data (Garavan et al., 2001, O'Hanlon et al., 2005, McGee, 2005).

Home care is provided on the basis of individual assessment of need conducted by HSE staff. Standardised data on the dependency levels of recipients of either the basic or enhanced level of home care are currently unavailable due to the variety of assessment methods used across the system.

Not only is quantum of service provided in doubt, but knowledge of the determinants of formal home care utilisation at a population level in Ireland is weak. This creates a gap in understanding how different dependency levels are catered for across the long-term care continuum. The aim of this study is to provide a population based estimate of the utilisation of formal home care by older Irish adults and to identify the principal characteristics of those utilising home care. Aday and Andersen's adaptation of the behavioural model of health service utilisation was used as a framework for the analysis (Andersen & Newman, 1973, Aday & Andersen, 1974). This framework enables identification of the characteristics of the population most likely to avail of publicly financed home care services, grouping into predisposing, enabling and need factors. Predisposing factors describe the "propensity" of individuals to use services and mostly relate to socio-demographic characteristics such as age or living arrangements. Factors such as socio-economic status or education which facilitate access to services are classified as enabling factors. Finally, need factors refer to the illness level of the individual, which may include illness or need as perceived by the individual, or as evaluated by professionals. This approach will contribute to our understanding of the relative contribution of different factors in explaining the utilisation of formal home-based care services in Ireland.

## **Methods**

### **Design and sample selection**

This study is cross-sectional in design using data from the first wave of the Irish Longitudinal Study on Ageing (TILDA). The target population for the first wave of TILDA was the population of persons aged 50 years or over, living at a residential address in the Republic of Ireland. The sampling frame used was the Irish Geodirectory, a listing of all residential addresses compiled by the Irish Postal Service (Geodirectory, 2008). A multi-stage probability sample of addresses was selected using the RANSAM sampling system (Whelan, 1979). In the first stage, residential addresses were grouped into clusters. The clusters were stratified by socio-economic group and by geography. Clusters were selected randomly with a probability of selection proportional to the estimated number of persons aged 50 years or over in each cluster, 640 clusters were selected from the total of 3,155 clusters. In the second stage, a probability sample of 40 addresses within each cluster was selected, yielding a total of 25,600 addresses (Whelan & Savva, 2013). The resulting sample is self-weighting except for biases caused by non-random variations in response rates. These biases have been dealt with at the analysis stage by means of calibration weights.

### **Data collection**

Prior to data collection, a nationwide information campaign was conducted. Letters inviting participation were sent to each address in advance of an interviewer visit. Respondents were required to provide written informed consent to participate in the study which may have resulted in the exclusion of those with severe cognitive impairment. Computer-aided personal interviews were conducted in the homes of respondents over a 17 month period from October 2009 to February 2011.

### **Measurements**

#### ***Dependent variable***

The outcome variable was utilisation of publicly financed formal home care services. Respondents were asked if they had received the services of a home help or a personal care attendant in the previous 12 months. They were asked to exclude any services for which they had paid anything, other than a token or nominal amount.

#### ***Independent variables***

The following independent variables grouped as predisposing, enabling and need factors were included in the analysis.

#### ***Predisposing factors***

Predisposing factors included age, gender, marital status and living arrangement. State services for older adults in Ireland are provided from the age of 65 years. More than three quarters of home care packages are provided to those aged 75 years and older (PA Consulting Group, 2009). Therefore age was grouped into two categories, 65-74 years and 75+ years to capture service utilisation in these age groups. Living

arrangement was categorised into living alone, living with others (not spouse/partner) and living with a spouse/partner with or without others living in the household.

#### *Enabling factors*

Education and health insurance status were used as indicators of socio-economic status. Respondents were asked to indicate the highest level of education that they had completed. This was classified into primary, secondary and tertiary level. Health insurance status was assessed by asking respondents if they had a means tested medical or GP visit card. A medical card provides free general practitioner (GP) care including heavily subsidised prescribed medicines and a GP visit card provides free GP care only. Those without a medical card or GP visit card must pay out of pocket for GP services in Ireland. Residential location was categorised into Dublin city or county, a city or town outside Dublin and a rural location. The availability of informal help was identified by asking family respondents if, in the last two years they or their spouse/partner had received any help from non-resident children or grandchildren, other relatives or neighbours and friends. The type of help specified was practical household help and help with paperwork.

#### *Need factors*

Independent variables reflecting a need for care included self-reported disability status, health status, health service utilisation and conditions experienced by the individual.

Disability status was measured using the Activities of Daily Living (ADL) index (Katz et al., 1963) and the Instrumental Activities of Daily Living Scale (Lawton & Brody, 1969). The ADL index assesses difficulty in performing activities related to personal care; these include dressing, walking across a room, bathing/showering, eating, getting into or out of bed and using the toilet. The sum of ADL difficulties ranged from 0-6. ADL difficulty was classified as having one or more self-reported ADL difficulties. The IADL scale assesses difficulty in relation to carrying out household activity. The difficulties assessed included activities related to preparing a meal, doing household chores, shopping for groceries, making telephone calls, taking medications and managing money. The sum of IADL difficulties ranged from 0-6. IADL difficulty was classified as having one or more self-reported IADL difficulties. Internal consistency testing of the ADL and IADL scales yielded Cronbach's alphas of 0.97 and 0.79 respectively. A combined ADL/IADL disability variable was constructed in which individuals with at least one ADL or IADL difficulty were defined as "disabled".

Self-reported health status was assessed by asking respondents to rate their health relative to others of the same age and to rate their emotional or mental health. Respondents were also asked if they experienced limitations due to a long-term health problem, illness, disability or infirmity.

Health service utilisation was measured by asking respondents whether or not they had been admitted to a hospital or a nursing home overnight in the previous 12 months.

A range of specific medical conditions were used as independent variables reflecting “need”. Depressive symptoms were assessed using the Centre for Epidemiologic Studies Depression Scale (CES\_D). This 20 item self-report scale was developed to measure depressive symptomatology in large scale epidemiologic studies. Respondents were asked to rate the frequency of a range of symptoms experienced over the previous week. A score of 16 or higher was used as the cut-off point for severe depressive symptoms, as validated by Myers and Weissman (1980). Previous research has demonstrated that the sensitivity for major depression is 100% and specificity is 88% when this cut-off is used (Beekman et al., 1997).

Cognitive function was assessed using orientation to time, verbal learning and recall. *Orientation to time* was assessed using four standard questions from the Mini-mental State Examination on the day, month, year and date (MMSE) (Folstein et al., 1975). *Verbal learning and recall* were assessed immediately after listing 10 common words and again after a delay in which other questions were asked. The scores for orientation (0-4), verbal learning and immediate recall (0-10) and delayed recall (0-10) were summed to create a continuous memory score which ranged from 0-24 (Ofstedal MB., 2005, Langa et al., 2009).

Other need variables included the limitation of activities due to urinary incontinence, difficulties with usual activities due to pain and the use of five or more medications. Respondents were asked how often they felt lonely in the past week. Rare or occasional loneliness was coded as 0, loneliness experienced a moderate amount to all of the time (between 3-7 days in the last week) was coded as 1.

Informal help for ADL difficulties received from individuals both within the home and outside was considered as an independent variable in the analysis. However, multicollinearity with IADL difficulty was detected and this variable was removed from the analysis.

## **Statistical analysis**

### *Regression analyses*

Multivariable logistic regression analysis was performed using utilisation of formal home care as the dependent variable. The probability of using home care was modelled as a function of the independent variables. Independent variables which were significant on bivariate analysis were included in the logistic regression models.

### *Statistical weights*

Statistical weights were applied to the sample to adjust for non-response. Individual weights calibrated against the Irish population were supplied by TILDA. The characteristics used for calibration were age, sex and education (primary, secondary, tertiary). The source for the weights was the Quarterly National Household Survey 2010 compiled by the Irish Central Statistics Office.

Missing data resulted in cases being excluded from the analysis. Where respondents refused to answer or were uncertain regarding the answer, these cases were treated as missing. The maximum amount of data missing for any independent variable was 2.1%. The statistical package SPSS version 18 was used to conduct the analysis.

### **Ethical approval**

The study was approved by the Department of Health Policy and Management and the Centre for Global Health Research Ethics Committee at Trinity College, Dublin.

## Results

The household response rate was 62.0%, 8,175 people aged 50 years or older took part in the first wave of TILDA. The analysis for this study, is based on respondents aged 65 years or older (n=3507). The characteristics of this group are described in Table 1. Respondents ranged in age from 65 to 105 years, mean age 73.3 years, 55.0% were female and just over one third lived alone. More than half of respondents had a primary school education only and half lived in a rural area. Most (79.4%) had access to free GP care through the medical card/GP visit card scheme. Difficulty with at least one ADL was experienced by 13.6% and difficulty with at least one IADL was experienced by 13.0% of the sample. In total 19.5% of those aged 65 years and older self-reported a disability.

[Table 1]

The ADL difficulties most commonly experienced were those associated with dressing and bathing/showering. Shopping for groceries, doing work around the house and preparing a hot meal were the most frequently experienced IADL difficulties. Unsurprisingly, the prevalence of both ADL and IADL difficulties was found to increase strongly with age (Figure 1).

[Figure1]

### Formal home care utilisation

Domestic help services were utilised by 7.5% of those aged 65 years and older and personal care services by 1.2% (Table 2). Utilisation of domestic help and personal care were combined to create a single variable “formal home care” in order to achieve comparability with Irish health service data. This resulted in an estimate of 8.2% (95% CI 7.1%-9.3%) of those aged 65 years and older utilising formal home care. This equates to an estimate of 41,173 (95% CI 35,519- 46,828) people utilising these services in the Irish population.

[Table 2]

Heterogeneity of formal home care service utilisation can be seen across the age groups. Utilisation increased gradually from 1.6% of those aged 65-69 to 30.3% of those aged 85 years and older (Figure 2).

[Figure 2]

### Determinants of formal home care utilisation

Results for each of the 11 independent variables in the final model are presented (Table 3). Predisposing, enabling and need factors all feature as major determinants of formal home care utilisation in Ireland. Those with an IADL were more likely (Adj OR 3.8, 95% CI 2.7-5.3) to be in receipt of formal home care compared to those without an IADL. Older adults (Adj 3.4, 95% CI 2.4-4.8) were more likely than those

in the younger age group to be in receipt of formal home care as were those living alone (Adj OR 2.6, 95% CI 1.9-3.8) compared to those living with a spouse/partner.

[Table 3]

### ***Formal home care utilisation and ADL / IADL difficulty***

The data revealed that almost half (45.5%) of those utilising formal home care had no self-reported disability.

[Table 4]

Despite this apparent mis-targeting of those with low levels of disability, it was still the case that certain variables were strong predictors of home care utilisation. For example, amongst the group with a disability, those who lived alone were more likely (Adj OR 3.5, 95% CI 2.1-6.0) to utilise formal care compared to those living with a spouse or partner (Table 5). Furthermore, intensity of disability (in the sense of multiple IADL difficulties) had a very significant effect on home care utilisation (Adj OR 1.5, 95% CI 1.3-1.7).

[Table 5]

The most significant predictors of formal home care utilisation in those without a disability were increasing age (Adj OR 7.2, 95% CI 4.3-12.0), living alone (Adj OR 2.4, 95% CI 1.5-4.0) and receipt of informal help (Adj OR 3.0, 95% CI 1.9-4.8) (Table 5). Other need factors including admission to hospital in the previous year (Adj OR 1.8, 95% CI 1.1-3.1) were determinants of formal home care utilisation in the non-disabled group. These relationships highlight the factors which influence allocation of home care and suggest that factors other than need narrowly defined are important in the decision to allocate formal care to a particular person. Thus, staff may rely on easily observed risk factors such as age or living arrangement. Also, falling within the healthcare system through being in hospital or experiencing chronic illness may more easily bring a person to the attention of those allocating care, or attentive relatives may play a role in high-lighting a particular person's situation.

## Discussion

### Formal home care utilisation

This study reveals that 7.5% of respondents aged 65 years and older received domestic help from the State. This is broadly in line with the results of previous research which found a significant difference between the utilisation of domestic help in the Republic of Ireland (ROI) and our nearest neighbour Northern Ireland (NI). Only 7% of those aged 65 years and older were found to utilise domestic help in the ROI compared to 17% in NI (McGee, 2005). The low level of personal care attendant utilisation (1.2%) found in this study is also consistent with previous regional studies which found personal care attendant utilisation rates of between 1%-2% in different health service regions (O'Hanlon et al., 2005).

Population based studies of domestic help utilisation have consistently found a lower level of utilisation compared to estimates produced by the health service. In order to compare the TILDA results with the service estimates, domestic help and personal care were combined to yield a new formal home care estimate of 8.2% or 41,173 in the population (95% CI 35,519-46,828). This figure includes those who received domestic help or personal care as part of a 'home care package'. Health service estimates indicate that almost 46,000 individuals aged 65 years and older received home care either directly or indirectly on behalf of the HSE at the end of 2010, the year the data were collected (Health Service Executive, 2011). A further 9,500 received home care packages giving a total of approximately 55,500 overall. Thus the TILDA study, like the other studies cited above, found slightly lower levels of formal home care when compared to the official figures. Non-response bias may explain some of this discrepancy as non-respondents to this survey may have suffered more co-morbidity, disability and cognitive impairment than respondents and therefore may have utilised more formal care services.

### ***Determinants of home care in those aged 65 years and older***

The analysis presented above identifies self-reported difficulty with an IADL, older age and living alone as the key determinants of formal home care utilisation in adults aged 65 years and older in Ireland.

#### *ADL/IADL disability*

IADL disability is the most important determinant of formal home care utilisation in Ireland. Despite the reduction in disability rates in older populations (Manton, 2001) the increase in the proportion of older people in the population in the future will result in an increase in the absolute number of older people living with disability. It is recommended that evidence based interventions aimed at promoting physical activity and reducing disability and chronic disease across the life span are supported in order to modify this major determinant of home care utilisation. This requires action aimed at individuals as well as their social network (Gellert et al., 2011) and requires action across Government departments as outlined in the National Positive Ageing Strategy (Department of Health, 2013).

Current policy advocates a reduction in the number of older people in institutional long-term care and an emphasis on home care for those with low to moderate levels of need (Department of Health and Children, 2010). This requires a home care service with sufficient capacity to meet personal care needs. It is therefore surprising that IADL was the main driver of home care in this study. No evidence was found to suggest that a shift in emphasis from domestic to personal care at home is taking place in Ireland. The HSE currently monitors domestic care and personal care provision as a single entity. This provides a crude measure of home care provision overall. If services are to be reoriented to support those currently in institutional care to enable them to live at home the service must provide more personal care and demonstrate this by monitoring the type of care provided and the characteristics of those in receipt of care.

### *Older age*

Older age is a strong determinant of home care utilisation in Ireland. This is consistent with other studies on the determinants of home care (Stoddart et al., 2002, Litwin, 2004, Larsson et al., 2006). This finding is significant from a policy perspective as the numbers of older people in this older age category are set to increase. Two interpretations of this finding are put forward here. The first is that age (beyond 75 years) becomes a need factor in its own right. This perception of vulnerability and potential risk at older ages then becomes an access pathway to home care. Saliba et al (2001) have previously identified the importance of age in identifying those vulnerable to functional decline and death over a two year period. The second interpretation is that defined need criteria for entry to the system carry less weight in the overall distribution of care as age increases. This raises concerns about the sustainability of the current model and the ability to resource home care in the future. It suggests that close monitoring of need factors in combination with increasing age is required.

### *Living alone*

Living alone compared to living with a spouse or partner also explains a significant proportion of home care utilisation in this study. This is consistent with international research on care which identifies living alone as a major determinant of home care utilisation (Meinow et al., 2005, Larsson et al., 2006). This finding suggests that where older adults live with others they are either less likely to be assessed for or receive formal home care. As longevity increases and older couples live together for a longer period of time, this source of informal care will increasingly come under stress as the care-givers themselves age. From a policy perspective this requires a focus on carers, specifically older carers. The focus on those living alone may also be an attempt to address issues related to social or emotional isolation. Interventions aimed at alleviating loneliness and preventing social isolation and promoting inclusion of older people in their local community should be supported (Department of Health, 2013). There is evidence emerging that diversification of care services including services such as transport may suit the needs of older people more effectively than domestic help and may promote individual autonomy (Sundstrom et al., 2011). Alternative models of loneliness alleviation including the role of social housing should also be explored.

As the population ages there is a need to monitor the characteristics of those utilising formal home-based care. It is recommended that standardised assessment instruments are introduced in order to ensure equity of access to formal care. Data from the assessments should be collated at a national level thus providing a comprehensive picture of the determinants of service provision. This would in turn provide a baseline for deriving thresholds for initiating and decreasing service provision thus increasing the efficiency and flexibility of the home care system.

### **Disability and formal care utilisation**

In this study 80.5% of older people living in the community in Ireland had no difficulties with an ADL or an IADL. A large body of literature on formal home care examined utilisation only in those with an ADL or IADL disability (Katz et al., 2000, Langa et al., 2001, Davin et al., 2005, Kemper, 2008, Kamiya et al., 2012). Disability defined by an ADL/IADL difficulty is often used to model expenditure on long-term care without any recognition that those without a disability may also utilise the services available (Pickard et al., 2007). The research presented above suggests that a limited focus on ADL/IADL difficulties only may miss out on other important types of need. It was shown that almost half of those receiving formal care did not have an ADL or IADL difficulty. Within the non-disabled group those utilising formal home care were significantly more likely to have had a health system contact in the previous 12 months than were those that did not have such a contact. The health system seems to provide a gate-keeping role in accessing social care in Ireland. When medical need is high, there is pressure to free up acute care beds which may trigger referral to home-based social care (Timonen et al., 2012). As this study is cross-sectional it is not possible to determine whether care was initiated during a hospital stay or in the community. However, it does raise the possibility that assessment in a hospital context is less stringent and provides a more rapid gateway to formal home care than an assessment conducted at home.

Another explanation for this finding is that disability is a highly dynamic process which can be reversible and recurrent (Gill & Kurland, 2003). Longitudinal studies have been found to distinguish poorly between chronic and short-term disability (Gill et al., 2002). Some of those without a disability and utilising home care in this study may have been classified as disabled at the point of initiation of the home care service and continue to receive a service beyond the resolution of their disability. It is recommended that once home care is initiated there should be clear guidelines in relation to reassessment intervals in order to ascertain the on-going need for care.

### **Strengths and limitations of the research**

The strengths of this study include the large sample size which is generalizable to the Irish population and the face to face computer-aided interview technique employed. The study is limited by the cross-sectional design which allows the interpretation of associations but does not facilitate the investigation of causal relationships.

Older age was found to be a significant predictor of formal home care utilisation in this study. The size of this effect may have been overestimated as measures of physical frailty were not included in this analysis. The extent to which cognitive impairment can be examined as a determinant of home care is also limited as respondents were required to provide informed consent to participation during this first wave of data collection. This is likely to have resulted in a sample which is less cognitively impaired than would otherwise be expected. As a result, this study may underestimate the utilisation of formal home care in this particular group. This limitation will be overcome in subsequent waves of TILDA.

Factors associated with home care utilisation such as the availability of home care services and long-term residential care were beyond the scope of this study and could therefore be considered a limitation. However, no systematic variation in the frequency of home care utilisation by region was identified and geographic location proved non-significant in all analyses.

## ***Conclusion***

This study has identified that a very small proportion of older people utilise formal home care in Ireland. The three most important drivers of home care utilisation were difficulty with an instrumental activity of daily living, older age and living alone. Although difficulty with an IADL was a predictor of care, almost half of all formal home care provided by the State was provided to individuals without an ADL or IADL difficulty. However, within both the disabled and non-disabled groups, care was found to be targeted at those with higher levels of need across a range of variables. This targeting has been carried out by front line staff in the absence of a nationwide framework to determine eligibility and in the absence of standardised assessment criteria. From a health services perspective the current situation is not sustainable into the future and requires a focused policy response.

## References

- Aday, L. A. & Andersen, R. (1974) A framework for the study of access to medical care. *Health Services Research*, **9**, 208-220.
- Andersen, R. & Newman, J. F. (1973) Societal and Individual Determinants of Medical Care Utilization in the United States. *The Milbank Quarterly*, **51**, 95-124.
- Beekman, A. T. F., Deeg, D. J. H., Van Limbeek, J., Braam, A. W., De Vries, M. Z. & Van Tilburg, W. (1997) Criterion validity of the Center for Epidemiologic Studies Depression scale (CES-D): results from a community-based sample of older subjects in the Netherlands. *Psychological Medicine*, **27**, 231-235.
- Brady, A. (2010) Statement by Minister for Older People Áine Brady T.D. on home care services. *Press Release 13/12/10*. Office for Older People, Dublin.
- Davin, B., Paraponaris, A. & Verger, P. (2005) Demographic and socioeconomic factors associated with needs for home assistance among community - dwelling elderly: A study from the French Home Survey Handicaps-Disabilities-Dependence. *Revue Epidemiologie De Sante Publique*, **53**, 509-524.
- Department of Health (2013) National Positive Ageing Strategy.
- Department of Health and Children (2010) Annual Output Statement 2010 for Health Group Votes. Department of Health and Children, Dublin.
- Folstein, M. F., Folstein, S. E. & McHugh, P. R. (1975) "Mini-mental state": a practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research*, **12**, 189-198.
- Garavan, R., Winder, R. & McGee, H. (2001) Health and Social Services for Older People (HeSSOP) Consulting older people on health and social services: A survey of service use, experiences and needs. National Council on Ageing and Older People, Dublin.
- Gellert, P., Ziegelmann, J., Warner, L. & Schwarzer, R. (2011) Physical activity intervention in older adults: does a participating partner make a difference? *European Journal of Ageing*, 1-9.
- Geodirectory (2008) Available <https://www.geodirectory.ie/> [Accessed 14/04/14].
- Gill, T. & Kurland, B. (2003) The Burden and Patterns of Disability in Activities of Daily Living Among Community-living Older Persons. *The Journals of Gerontology*, **58A**, 70-75.
- Gill, T. M., Hardy, S. E. & Williams, C. S. (2002) Underestimation of Disability in Community-Living Older Persons. *Journal of the American Geriatrics Society*, **50**, 1492-1497.
- Health Service Executive (2008) Response to Parliamentary Question 34556/08 from Finian McGrath on Home Support Workers. Health Service Executive, Dublin.
- Health Service Executive (2011) Personal communication: Age breakdown for home help and home care package 2009 and 2010. IN C. Murphy (Ed.).
- Kamiya, Y., Murphy, C., Savva, G. & Timonen, V. (2012) Profile of community-dwelling older people with disability and their caregivers in Ireland. The Irish Longitudinal Study on Ageing, Trinity College, Dublin.
- Katz, S., Ford, A. B., Moskowitz, R. W., Jackson, B. A. & Jaffe, M. W. (1963) Studies of Illness in the Aged: The Index of ADL: A Standardized Measure of Biological

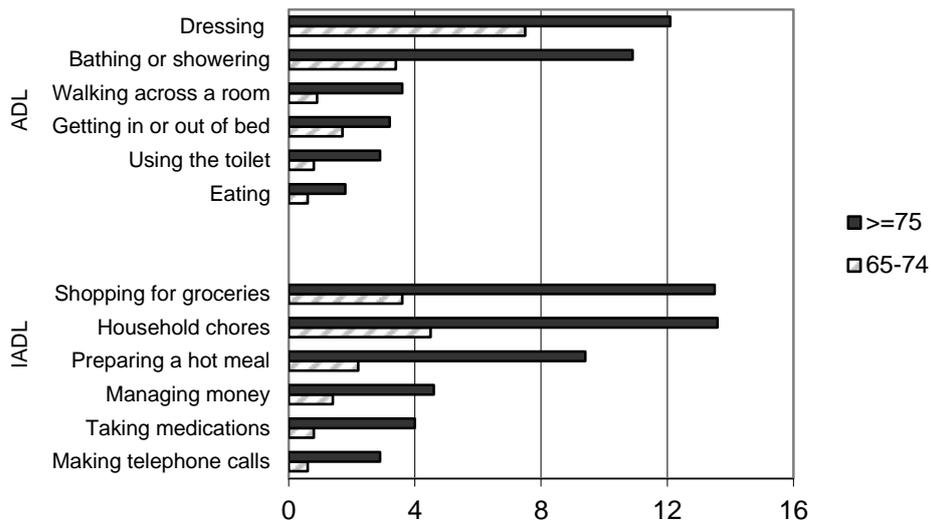
- and Psychosocial Function. *Journal of the American Medical Association*, **185**, 914-919.
- Katz, S. J., Kabeto, M. & Langa, K. M. (2000) Gender Disparities in the Receipt of Home Care for Elderly People With Disability in the United States. *JAMA*, **284**, 3022-3027.
- Kemper, P., Weaver, F., Farley Short, P., Shea, D., Kang, H., (2008) Meeting the Need for Personal Care among the Elderly: Does Medicaid Home Care Spending Matter? *Health Services Research*, **43**, 344-362.
- Langa, K., Chernew, M., Kabeto, M. & Katz, S. (2001) The Explosion in Paid Home Health Care in the 1990s. Who Received the Additional Services? *Medical Care*, **39**, 147-157.
- Langa, K. M., Llewellyn, D. J., Lang, I. A., *et al.* (2009) Cognitive health among older adults in the United States and in England. *BMC Geriatr*, **9**, 23.
- Larsson, K., Thorslund, M. & Kareholt, I. (2006) Are public care and services for older people targeted according to need? Applying the behavioural model on longitudinal data of a Swedish urban older population *European Journal of Ageing*, **1**, 22-33.
- Lawton, M. P. & Brody, E. M. (1969) Assessment of Older People: Self-Maintaining and Instrumental Activities of Daily Living. *Gerontologist*, **9**, 179-186.
- Litwin, H. (2004) Social networks, ethnicity and public home-care utilization. *Ageing & Society*, **24**, 921-939.
- Manton, K. G., Gu, X., (2001) Changes in the prevalence of chronic disability in the United States black and nonblack population above age 65 from 1982-1999. *Proceedings of the National Academy of Sciences of the United States of America*.
- McGee, H., O'Hanlon, A., Barker, M., Hickey, A., Garavan, R., Conroy, R., Layte, R., Shelley, E., Horgan, F., Crow (2005) One Island-Two Systems, A comparison of health status and health and social service use by community-dwelling older people in the Republic of Ireland and Northern Ireland. The Institute of Public Health in Ireland, Dublin.
- Meinow, B., Kåreholt, I. & Lagergren, M. (2005) According to need? Predicting the amount of municipal home help allocated to elderly recipients in an urban area of Sweden. *Health & Social Care in the Community*, **13**, 366-377.
- Myers, J. K. & Weissman, M. M. (1980) Use of a self-report symptom scale to detect depression in a community sample. *American Journal of Psychiatry*, **137**, 1081-1084.
- National Economic and Social Council (2012) Quality and Standards in Human Services in Ireland: Home Care for Older People. National Economic and Social Council, Dublin.
- O'Hanlon, A., McGee, H., Barker, M., *et al.* (2005) Health and Social Services for Older People II (HeSSOP II) Changing Profiles from 2000-2004. National Council on Ageing and Older People, Dublin.
- OECD (2005) Long-Term Care for Older People. OECD, Paris.
- Ofstedal MB., F., GG., Herzog, AR. (2005) Documentation of Cognitive Functioning Measures in the Health and Retirement Study. *HRS Documentation Report DR-006* Survey Research Centre Ann Arbor, Michigan.

- PA Consulting Group (2009) Evaluation of Home Care Packages. Department of Health and Children, Dublin.
- PA Consulting Group (2010) Analysis of Irish Home Care Market. Irish Private Home Care Association, Dublin.
- Pickard, L., Comas-Herrera, A., Costa-Font, J., *et al.* (2007) Modelling an entitlement to long-term care services for older people in Europe: projections for long-term care expenditure to 2050. *Journal of European Social Policy*, **17**, 33-48.
- Saliba, D., Elliott, M., Rubenstein, L. Z., *et al.* (2001) The Vulnerable Elders Survey: A Tool for Identifying Vulnerable Older People in the Community. *Journal of the American Geriatrics Society*, **49**, 1691-1699.
- Stoddart, H., Whitley, E., Harvey, I. & Sharp, D. (2002) What determines the use of home care services by elderly people? *Health & Social Care in the Community*, **10**, 348-360.
- Sundstrom, G., Herlofson, K., Daatland, S., *et al.* (2011) Diversification of old-age care services for older people: Trade-offs between coverage diversification and targeting in European countries. *Journal of Care Services Management*, **5**, 35-42.
- Timonen, V. & Doyle, M. (2007) Worlds apart? Public, private and non-profit sector providers of domiciliary care for older persons in Ireland. *Journal of Aging Studies*, **21**, 255-265.
- Timonen, V., Doyle, M. & O'Dwyer, C. (2012) Expanded, but not regulated: ambiguity in home-care policy in Ireland. *Health & Social Care in the Community*, **20**, 310-318.
- Timonen, V., Doyle, M. & Prengergast, D. (2006) *No Place Like Home. Domiciliary Care Services for Older People in Ireland*, The Liffey Press, Dublin.
- Whelan, B. J. (1979) RANSAM: A national random sampling design for Ireland. *The Economic and Social Review*, **10**.
- Whelan, B. J. & Savva, G. M. (2013) Design and methodology of The Irish Longitudinal Study on Ageing. *Journal of the American Geriatrics Society*, **61**, S265-S268.

**Table 1: Characteristics of the TILDA sample aged 65 years and older (wave 1)**

		≥65 yrs n=3507 (%)
<b>PREDISPOSING FACTORS</b>		
<i>Age</i>	Age in years-mean (SD)	73.3 (6.4)
<i>Age group</i>	65-74	56.2
	≥75	43.7
<i>Sex</i>	Female	55.0
<i>Living arrangement</i>	Alone	34.2
	Lives with others not spouse	10.4
	Lives with spouse/partner	55.3
<b>ENABLING FACTORS</b>		
<i>Education</i>	Primary	56.6
	Secondary	31.1
	Tertiary	12.3
<i>Location</i>	In Dublin city or county	22.9
	In a city or town not Dublin	27.9
	In a rural area	49.1
<i>Health insurance status</i>	Med/GP card	79.4
<i>Informal help</i>	Domestic or paperwork help	42.3
<b>NEED FACTORS</b>		
<i>Disability status</i>	ADL one plus	13.6
	IADL one plus	13.0
	ADL/IADL Disability	19.5
<i>Perceived health status</i>	Self-reported fair/poor health compared to others	18.0
	Self-reported fair/poor emotional mental health	10.1
	Self-reported limiting long-term illness or disability	27.5
<i>Health service use</i>	Admitted to hospital in last year	15.9
	Admitted to a nursing home in the last year	1.0
<i>Conditions experienced</i>	Severe depressive symptoms	8.9 <sup>b</sup>
	Urinary incontinence limits activity	4.0
	Pain limits activity	23.0
	Lonely: moderate to all the time	8.8
	Poly-pharmacy	34.2 <sup>a</sup>
	Memory score-mean (SD)	13.6 (4.0)

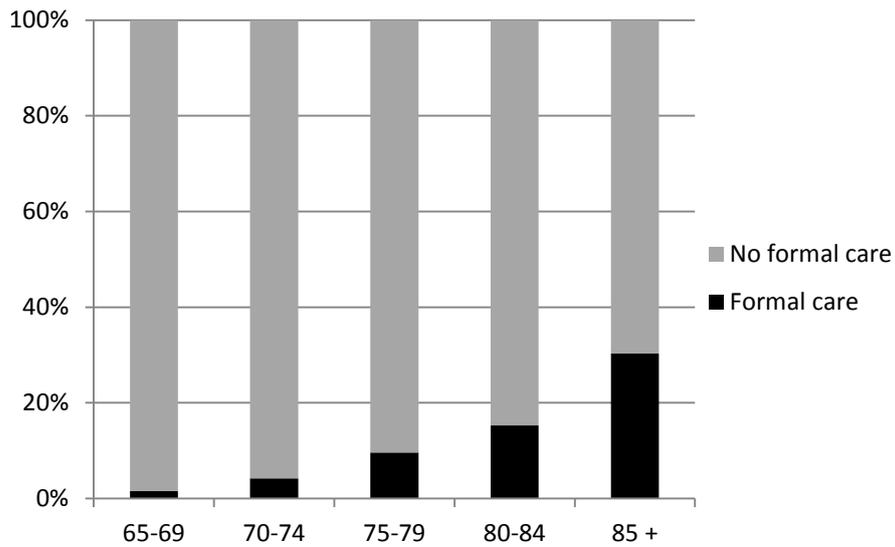
Missing data 0%-1% except for a=1%-2%, b=2%-3%



**Figure 1: ADL and IADL difficulty by age group (TILDA wave1)**

**Table 2: Utilisation of formal home care in those aged 65 years and older (TILDA wave 1)**

Service type	≥65 yrs (n=3507)	
	%	95 % CI
Domestic help	7.5	6.4-8.6
Personal care attendant	1.2	0.7-1.6
<b>Formal home care</b>	<b>8.2</b>	<b>7.1-9.3</b>



**Figure 2: Formal home care utilisation by age group (TILDA wave 1)**

**Table 3: Multivariable logistic regression model for formal home care utilisation in those aged 65 years and over (TILDA wave1)**

Independent variables		Formal care ≥65 years (n=3507)		
		Adj OR	95% CI	p-value
<b>Predisposing factors</b>				
Age group	65-74(Ref)	-	-	-
	≥75	3.4	2.4-4.8	<0.001
Living arrangement	Lives with spouse/partner (Ref)	-	-	-
	Lives with others not spouse	1.1	0.6-2.0	0.540
	Alone	2.6	1.9-3.8	<0.001
<b>Enabling factors</b>				
Health insurance	Medical card/GP card	2.0	1.1-3.7	0.023
Informal help	Domestic or paperwork help	2.1	1.5-2.9	<0.001
<b>Need factors</b>				
Disability status	IADL one or more	3.8	2.7-5.3	<0.001
Perceived health	Self-reported fair/poor health compared to others	1.6	1.1-2.4	0.004
Health service use	Admitted to hospital in last year	1.3	0.9-2.0	0.082
	Admitted to a nursing home in the last year	2.7	1.1-6.3	0.021
Other conditions	Pain limits activity	1.7	1.2-2.4	0.001
	Poly-pharmacy	1.6	1.2-2.2	<0.001
	Memory score	0.9	0.9-1.0	0.038
Naglekerke R <sup>2</sup>				0.281
Hosmer & Lemeshow			$\chi^2=7.97$ , p=0.436	

Adj OR=Adjusted Odds Ratio

Variables entered into the final logistic regression model (11 in total): Age, living arrangement, medical card/GP card, informal domestic or paperwork help, IADL one or more, self-rated fair/poor health compared to others, admitted to a hospital in the last year, admitted to a nursing home in the last year, activity limited by pain, poly-pharmacy and memory score. Number analysed 3446.

**Table 4: Formal home care by self-reported disability in those aged 65 and over (TILDA wave 1)**

	Formal home care		
	%	Population estimate	95% CI
Self-reported disability	54.4	22,401	19,660-21,513
No self-reported disability	45.5	18,772	14,907-22,638
Total	100	41,173	35,519-46,828

**Table 5: Multivariable logistic regression models for formal home care utilisation in those with disability and those without disability aged 65 years and older (TILDA wave 1)**

Independent variables		Formal care in the disabled group (n=617)			Formal care in the non-disabled group (n=2890)		
		Adj OR	95% CI	p-value	Adj OR	95% CI	p-value
<b>Predisposing factors</b>							
<i>Age group</i>	65-74 (Ref)	-	-	-	-	-	-
	75+	1.7	1.0-2.8	0.021	7.2	4.3-12.0	<0.001
<i>Sex</i>	Female	1.7	1.0-2.8	0.029			
<i>Living arrangement</i>	Lives with spouse/partner (Ref)	-	-	-	-	-	-
	Lives with others not spouse	1.0	0.5-2.2	0.920	1.2	0.5-2.9	0.560
	Alone	3.5	2.1-6.0	<0.001	2.4	1.5-4.0	<0.001
<b>Enabling factors</b>							
<i>Informal</i>	Domestic or paperwork help				3.0	1.9-4.8	<0.001
<b>Need factors</b>							
<i>Disability status</i>	Number of ADL difficulties	1.1	1.0-1.3	0.067			
	Number of IADL difficulties	1.5	1.3-1.7	<0.001			
<i>Perceived health</i>	Self-reported fair/poor health compared to others				2.1	2.2-3.6	0.004
<i>Health service use</i>	Admitted to hospital in last year				1.8	1.1-3.1	0.012
<i>Other conditions</i>	Severe depressive symptoms				2.3	1.2-4.4	0.009
	Pain limits activity				2.3	1.4-3.7	0.001
	Poly-pharmacy				1.8	1.1-2.8	0.008
Naglekerke R <sup>2</sup>				0.176	0.242		
Hosmer and Lemeshow				$\chi^2=11.74$ , p=0.163	$\chi^2=11.64$ , p=0.168		

Adj OR=Adjusted Odds Ratio

Disabled group: Dependent variable Formal care, 5 independent variables entered into the final model: Age group, sex, living arrangement, number of ADL difficulties and number of IADL difficulties. Number analysed 617.

Non-disabled group: Dependent variable Formal care, 8 independent variables entered into the final model: Age group, living arrangement, receipt of informal domestic or paperwork help, self-reported fair/poor health compared to others, admitted to a hospital in the last year, severe depressive symptoms, activity limited by pain and poly-pharmacy. Number analysed 2796.