

# FRAILTY AND DISABILITY

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Centre for Ageing Research  
and Development in Ireland

RESEARCH BRIEF

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### **Research Briefing paper**

This research briefing paper represents the findings from a project funded under CARDI's 2013 data-mining funding programme. The paper includes key findings from the funded research team and additional information collated by CARDI. The full report can be downloaded from [www.cardi.ie](http://www.cardi.ie)

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# Frailty and disability

Frailty is an important issue for many older people in Ireland, North and South. Rates of frailty increase markedly with age and the condition is often a stage along a road leading to functional decline, disability and dependence. Early detection of frailty can prevent or at least slow down the decline and improve the quality of life of those affected. Apart from the adverse effects on the older people concerned, frailty often places substantial demands on resources such as hospitals, family carers and long-term care institutions.

As part of its Data Mining 2013 Research Call, CARDI funded a project led by Dr Matthew O'Connell at Trinity College Dublin on Frailty and Disability in Ireland. The study sought to develop a measure of frailty from the indicators used in the 2010/11 Health Survey Northern Ireland (HSNI) which had 1,359 respondents aged 60+ and the first wave of The Irish Longitudinal Study on Ageing (TILDA) which had 4,901 people aged 60+. The final report (Scarlett et al., 2014) uses this measure to explore frailty in Northern Ireland (NI) and the Republic of Ireland (ROI), and to assess the relationship between frailty and disability.

## Key Findings

- ▶ The prevalence of frailty among people aged 60+ in NI (21%) is much higher than in ROI (7%) and the proportion who are pre-frail is also higher in NI (39%) than in ROI (35%).
- ▶ NI older people were more likely than those in ROI to have difficulty with walking, stair-climbing, activity, co-morbidity, and especially, exhaustion (38% compared with 9%).
- ▶ Women are more likely to be frail than men: 22% compared with 19% in NI and 7% compared with 6% in ROI.
- ▶ Prevalence of frailty rises with age. In NI 16% of people aged 60-64 are frail and 36% aged 80+. In ROI 3% of 60-64 year olds and 15% of those aged 80+ are frail.
- ▶ In NI 17% of people aged 60+ in high social class are frail, as are 29% of those in low. In ROI only 3% of high social class are frail compared with 10% in low.
- ▶ Among people aged 60-64, the rates of limiting disability are 43% in NI and 25% in ROI. In the 80+ group, 54% in NI and 29% in ROI have a limiting disability.

Source: (Scarlett et al., 2014)

## Measuring Frailty

Both the HSNI and TILDA asked respondents if they were suffering from long-term health problems; if people had problems which limited their activities in any way, they were classified as having a limiting disability. Frailty was measured using five criteria adapted from widely accepted models (Van Kan et al., 2008) (Fried et al., 2001):

1. Difficulty walking a short distance;
2. Difficulty climbing stairs;
3. Exhaustion/having energy to spare;
4. Extent of physical activity;
5. Co-morbidity: two or more of hypertension, lung disease, stroke, diabetes, angina and heart problems.

### What is frailty?

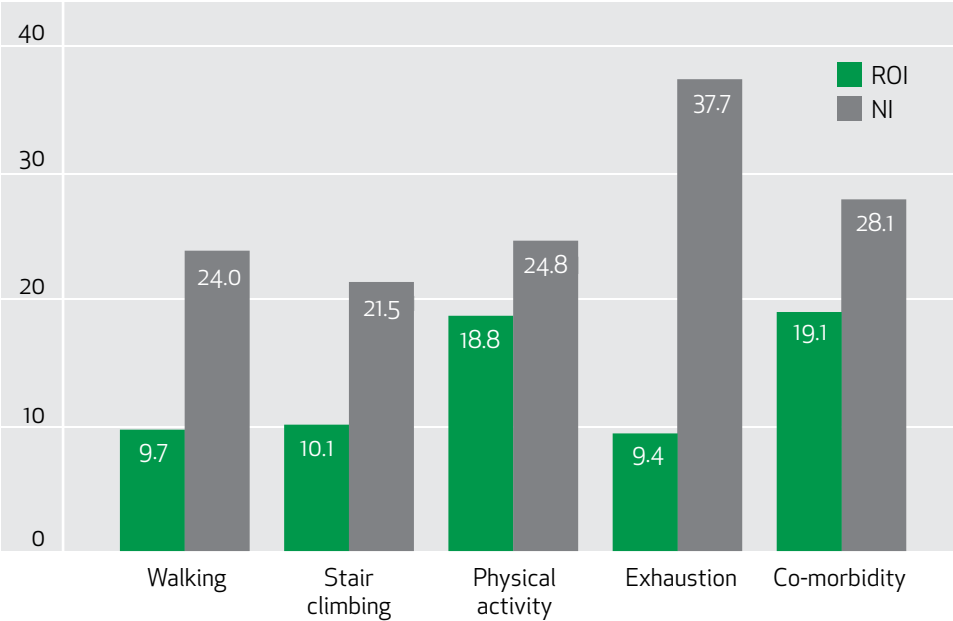
Frailty is 'a condition or syndrome which results from a multi-system reduction in reserve capacity to the extent that a number of physiological systems are close to, or past, the threshold of symptomatic clinical failure; and as a consequence the frail person is at increased risk of disability and death from minor external stresses' (Campbell & Buchner, 1997).

## North-South comparisons

North-South comparisons must be treated with caution because the items used to measure frailty are not identical. In some cases the NI requirement is more onerous e.g. able to walk 200 yards whereas the ROI question is about walking 100 metres. In other cases the ROI is more onerous e.g. has walked for ten minutes or more in the last week compared with the NI question about walking for five minutes in the last four weeks. Nonetheless, the authors concluded that: 'It is highly likely that the prevalence of frailty is higher in NI; with this study it is just not possible to determine how big the difference is and whether it would be clinically meaningful' (Scarlett et al., 2014, p. 31).

NI fared worse than ROI on all five frailty criteria (see Figure 1, p.5). Older people in NI were more than twice as likely as those in ROI to have difficulty walking and climbing stairs, and had substantially more difficulty with co-morbidity and physical activity. They were four times more likely to experience exhaustion.

Figure 1: frailty criteria people aged 60+ had difficulty with (Scarlett et al., 2014)

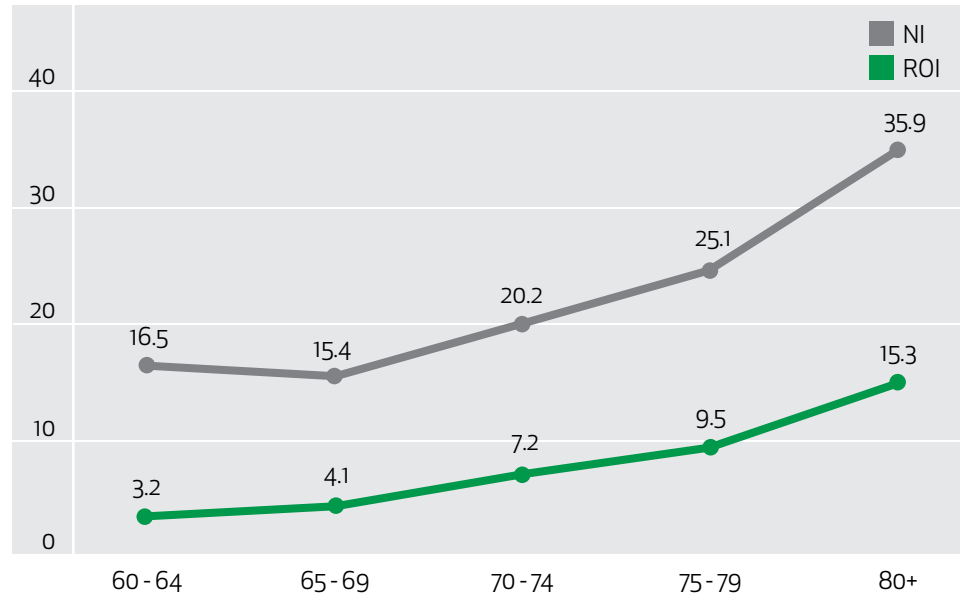


### Prevalence of frailty

The research team combined the frailty criteria into one measure (classifying people with three or more criteria as frail and those with 1-2 as intermediate or pre-frail) and compared it by age, sex and social class. Figure 2 (p.6) shows that the prevalence of frailty increases with age in both ROI and NI. One exception is the decline for ages 65-69 in NI which fits in with improved self-reported health in this age group (McGill, 2010). NI has consistently higher prevalence of frailty than ROI and the difference increases as the overall prevalence rises at older ages. The difference in prevalence is about 11-13 percentage points in the age groups 60-74 but increases to nearly 16 points for people aged 75-79 and to more than 20 points for those aged 80+. NI respondents are also more likely to be pre-frail than those in ROI by between three and six percentage points (except among people aged 80+ which can be explained by the high NI transition to full frailty).

Figure 2: frailty by age group

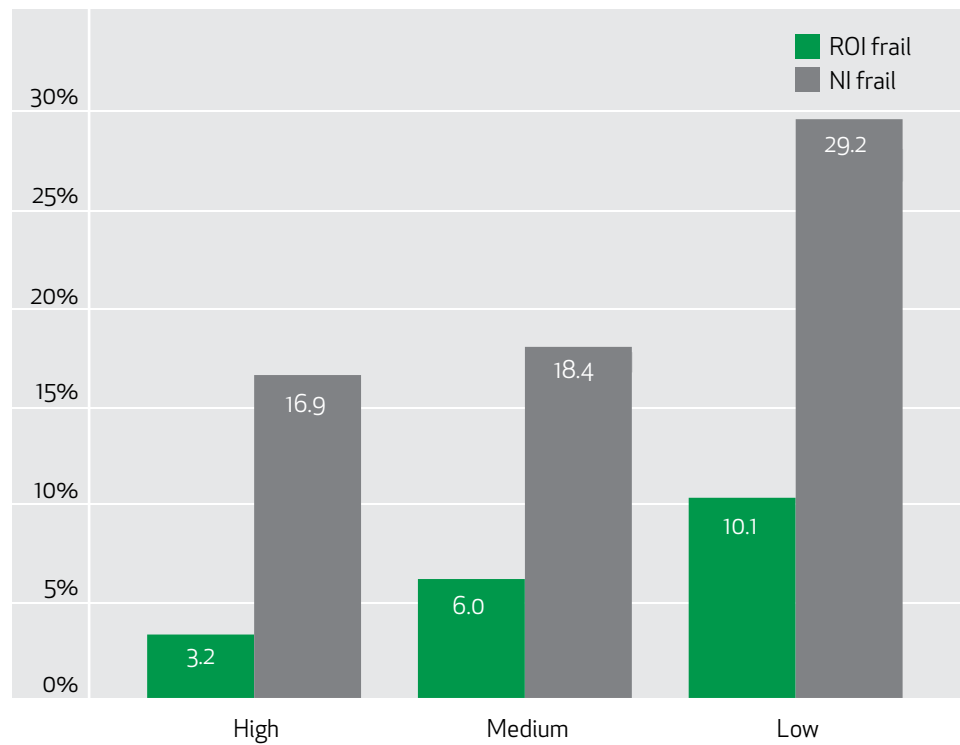
(Scarlett et al., 2014)



Frailty is more prevalent among women than men in ROI: 7% compared with 6%. Both sexes have higher rates in NI where 22% of women and 19% of men are frail.

Figure 3: prevalence of frailty by social class

(Scarlett et al., 2014)



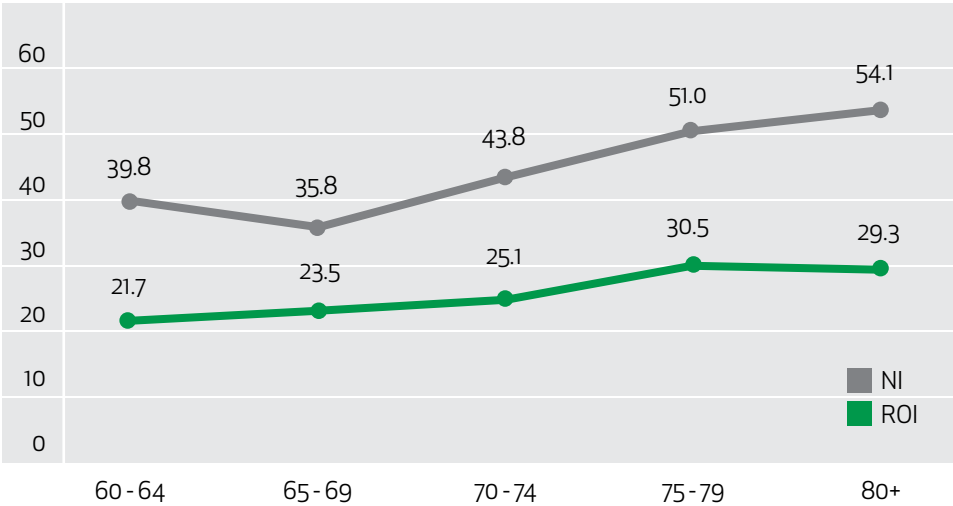
There are marked differences in the prevalence of frailty by social class (Figure 3, p.6). In ROI 3% of people from a professional/managerial background were classified as frail but three times more were frail among unskilled and semi-skilled people (10%). In NI 17% of high social class respondents were frail and this was true of 18% in the medium group and a substantially higher 29% in the low social class category. The gap between the highest and lowest social classes was greater in relative terms in ROI but greater in absolute terms in NI. The north-south difference exists across all social classes but is particularly large for people from unskilled/semi-skilled backgrounds where the gap is 19 percentage points (29% compared with 10%).

### Disability

There is considerable evidence of higher levels of disability in NI than in ROI. A north-south survey in 2004 found that 10% of people aged 65+ in ROI had some major difficulties with activities of daily living or were severely impaired but this was true of 23% of older people in NI (McGee et al., 2005). A comparison of surveys in 2006-07 noted that 21% of people aged 50+ in ROI had a limiting disability but this was true of 45% in NI (McDaid et al., 2013).

Figure 4: limiting disability by age

(Scarlett et al., 2014)



A comparison of the first wave of TILDA and the HSNi 2010/11 confirms that substantial differences still exist (Figure 4). As with frailty there is a drop in the prevalence of disability in NI at ages 65-69 but it then rises sharply from 36% to 54% among those aged 80+. In ROI the increase is more gradual and from a much lower base with the result that 70% of the 'older old' (75+) do not have a limiting disability. The disability gap between NI and ROI increases from 12 percentage points at age 65-69 to 25 points at age 80+.

## Frailty, mental health and disability

In a statistical analysis the research team found a close relationship between frailty and disability after adjusting for age and sex (using probability ranging from 0 to 1, with 0 meaning impossible and 1 meaning certain):

- ▶ people in ROI who met no frailty criteria had a 0.13 probability of being disabled but it was nearly six times higher (0.75) for those with three frailty criteria;
- ▶ in NI the probability of people with no frailty criteria being disabled was 0.15 but for those with three frailty criteria it was also nearly six times higher (0.85);
- ▶ all frailty criteria were related to disability but the strongest were limitations in walking and stair-climbing;

A difference between NI and ROI was in the relationship between co-morbidity and disability. People with two or more of hypertension, lung disease, stroke, diabetes, angina and heart problems were more likely to be disabled in ROI (Relative Risk (RR) = 1.39) than in NI (RR = 1.12) i.e. ROI co-morbid older people were 39% more likely to be disabled than those without co-morbidity and in NI they were 12% more likely.

The study also found that mental health criteria were more weakly related to disability than the physical criteria. However, problems with sleep and concentration were significantly related to disability in both NI and ROI. Feeling depressed was linked with frailty in ROI but not in NI.

### Case Study - CARTS

Community Assessment of Risk and Treatment Strategies (CARTS) is a programme piloted in Cork and Kerry with the goal of keeping older people healthy, independent and active in their own homes. Its genesis is the lack of effective strategies to screen community dwelling older people for risk of admission to institutions or risk of death, frailty and functional decline. 'These people come to our attention after they are falling, frail de-conditioned or have suffered an adverse event. Health systems are predominantly reactive and not proactive enough' (European Innovation Partnership on Active and Healthy Ageing Action Group A3, 2013, p. 207).

CARTS, which was developed by University College Cork, is a risk intervention strategy which aims to identify, quantify, triage, stratify and manage risk of adverse outcomes by assessing mental state, activities of daily living, medical issues, environment, nutrition, activity, falls, communication, behaviour and caregiver function. It assesses the ability of the overall caregiver network (professionals, family and friends) to assist the older person overcome their problems and identifies gaps, the 'care deficit'.

The programme is the first community screening programme for risk of frailty and functional decline in Ireland. A pilot of 800 older people suggests that 16% are frail and living alone, many of whom were unlikely to be receiving sufficient community support or home help services. The CARTS approach is being adopted in Northern Ireland and further afield in Turkey and Australia.

(European Innovation Partnership on Active and Healthy Ageing Action Group A3, 2013)



## Government policies

In NI there is a focus on providing community-based information, support and early interventions to allow people to manage long-term conditions and live independently (DHSSPS, 2012). More specifically there is a focus on frail older people in the *Transforming Your Care* strategic direction (DHSSPS, 2011) with six objectives:

1. Manage functional decline and frailty through targeted intervention in physical fitness, nutrition status, cognitive function, chronic conditions and diseases, and on the social or psychological wellbeing of older people.
2. Enhance the participation and independence of older people and their carers by empowering and enabling them to remain involved in meaningful activity and in a healthy lifestyle.
3. Promote systematic routine screening for pre-frailty stages in at-risk patients and older people.
4. Contribute to research and methodology on frailty and active and healthy ageing and contribute to knowledge generation concerning the mechanisms for ageing and the progression of frailty.
5. Contribute to managing demand and increasing the sustainability of health and social care by reducing the personal, systemic and societal costs associated with ageing.
6. Promote cooperation, including cross-sector international collaboration, between university research groups and companies dedicated to ageing issues in order to support competitive translational research and development.

(European Innovation Partnership on Active and Healthy Ageing Action Group A3, 2013)

In ROI National Goal 2 of the *National Positive Ageing Strategy* is to 'support people as they age to maintain, improve or manage their physical and mental health and wellbeing'. The associated Objective 1 is 'to prevent and reduce disability, chronic disease and premature mortality as people age by supporting the development and implementation of policies to reduce associated lifestyle factors' (Department of Health, 2013a, p. 20).

The Health Service Executive's *National Clinical Programme for Older People* seeks to:

1. Improve the management of acutely ill frail older adults in the acute hospital.
2. Increase independence in the home and reduce inappropriate admission to nursing homes.
3. Reduce the number of falls in older people.
4. Improve education – of the public, medical professionals, allied health professionals and policy decision shapers (Health Service Executive, 2012).

## Other policy and practice responses

The European Innovation Partnership on Active and Healthy Ageing has set a target to increase the healthy lifespan across Europe by two years by the year 2020. To this end it created the A3 Action group on frailty and functional decline in 2013 to focus research on frailty and translate findings into policy at the European level (see [http://ec.europa.eu/research/innovation-union/index\\_en.cfm?section=active-healthy-ageing&pg=action\\_group\\_a3](http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing&pg=action_group_a3)).

The International Association of Gerontology and Geriatrics (IAGG) is finalising a scientific paper on frailty for discussion with the World Health Organisation. In addition it has a group of experts developing a simplified geriatric assessment tool

to be used in primary health care by non-specialised health professionals in low and middle income countries. In March 2014 it launched a website (<http://www.frailty.net>) to help health professionals implement frailty into clinical practice.

At UK level the *Silver Book* (Banerjee & Conroy, 2012) produced by 13 organisations and endorsed by three UK Clinical Directors, gives clinical advice on care for frail older people during the first 24 hours of an urgent care episode. The British Geriatrics Society has also produced the first part of guidance on the care of frail older people in community and outpatient settings (British Geriatrics Society, 2014).

## Policy and practice implications

The main policy interest in frailty is that it may be possible to identify people at risk of functional decline and to intervene before the cascade into disability becomes irreversible e.g. through changes in diet, exercise programs and anabolic agents (Scarlett et al., 2014). This study demonstrates the potential to assess frailty using simple instruments based on routinely collected health survey data and without the need for tests using specialised equipment. The questions asked in TILDA and HSNI and used in this study to define frailty can be administered in less than 10 minutes and could be easily translated into a screening tool to be administered to people at risk (Scarlett et al., 2014).

The findings suggest a need to develop a standardised instrument in order to objectively compare individuals from different populations and identify 'true' inequalities. Such an instrument would help to more accurately quantify the difference in frailty between NI and the ROI, providing valuable information for policy makers (Scarlett et al., 2014).

Findings can be used to promote healthy ageing and to design interventions to meet the varying circumstances in NI and ROI and to be tailor-made for particularly vulnerable groups. For example, interventions might usefully target people from lower socio-economic groups as a priority since these groups have higher levels of frailty.

Clinical practice must be geared to the special needs of frail older people:

In the context of clinical care provision, frail older adults represent a challenge to clinicians because they usually present with an increased burden of symptoms, are medically complex, and less able to tolerate interventions of any kind (more prone to complications). In addition, patients who are frail have more subtle signs and symptoms that can be easily overlooked. (Romero-Ortuño et al., 2014).

Romero-Ortuño et al., (2014) argue that frailty is related to biological age rather than chronological age and acknowledge the need for effective means of objective measurement of the condition.

## Conclusion

Scarlett et al. (2014) note that one of the obstacles to accounting for frailty has been the need for detailed health assessments of factors such as walking speed or grip strength. The items used in their study could be used instead and with further validation may prove a useful screening tool for the population of Ireland, North and South. Difficulties with walking and stair climbing were most strongly related to disability so simple questions on mobility difficulties may be particularly useful for identifying older adults in the early stages of disability. Information on these activities is routinely collected in social surveys.

A screening tool may make it easier to intervene to help frail people before their condition worsens e.g. through improved nutrition, physical activity or health supplements. This could help people whose decline into disability can be prevented or slowed down.

Frailty is a strong predictor of disability and may help explain the significantly higher level of disability in NI than in ROI. 'Regardless of the harmonisation and measurement problems encountered, some of the difference in frailty seen between NI and the ROI is a real effect' (Scarlett et al., 2014, p. 31). The reasons for north-south differences in frailty and disability, and in health status generally, merit further discussion and research.

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