

# DISABILITY IN OLDER HEART DISEASE PATIENTS

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Centre for Ageing Research  
and Development in Ireland

RESEARCH BRIEF



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**Research brief**

This research brief represents findings from a project funded under CARDI's 2013 data-mining funding programme. The paper includes 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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# Disability in older heart disease patients

Deaths from coronary heart disease (CHD) in Ireland, North and South, are high by European standards and the number of adults who will have CHD in their lifetimes is forecast to rise rapidly due mainly to the ageing population. Although CHD has been shown to be a leading cause of disability there is sparse evidence about the risk factors for disability related to CHD.

As part of its data-mining research funding programme 2013 CARDI funded a project led by Professor Frank Kee at Queen's University Belfast on understanding disability in older heart disease patients in Ireland (Cruise, Hughes, Bennett, Kouvonen, & Kee, 2015). It drew on data from Northern Ireland (NI) and the Republic of Ireland (ROI) to examine differences by jurisdiction and by socio-economic position (SEP) on various factors underlying CHD-related disability and healthy life expectancy.

## Key findings (for people aged 50+)

- ▶ Prevalence of coronary heart disease (CHD) in NI is 12.4% compared to 8.6% in ROI.
- ▶ Prevalence of limiting long-term illness in NI is 43.4% compared to 24.2% in ROI (almost 80% higher).
- ▶ More than twice as many people in NI have both CHD and limiting long-term illness (8.8%) as in ROI (4.1%).
- ▶ Three times more people in NI have both CHD and limitations in activities of daily living (4.4%) as in ROI (1.5%).
- ▶ Men are more likely than women to have CHD-related disability (4.4% v 3.7% in ROI and 10% v 8.1% in NI).
- ▶ People in low SEP are more likely to have CHD-related disability than those in high positions (5.0% v 2.9% in ROI and 11.1% v 7.6% in NI).
- ▶ CHD-related disability becomes more prevalent with age e.g. among those aged 50-59 the rates are 1.6% in ROI and 4.0% in NI; among those aged 80+ the rates are 8.3% in ROI and 15.2% in NI.
- ▶ Rates of obesity and smoking are higher in ROI than NI; rates of physical inactivity, diabetes and severe depression are higher in NI.

## Chronic heart disease and disability

In recent years NI and ROI have seen a substantial decline in deaths from CHD but mortality rates are still among the highest in Europe (Bennett, Hughes, Jennings, Kee, & Shelley, 2013). In addition, the number of adults who will ever have CHD is predicted to rise by 30% in NI and 50% in ROI between 2007 and 2020 mainly due to the ageing population (Balanda, Barron, Fahy, & McLaughlin, 2010). As well as being a substantial cause of death CHD is a leading cause of disability in older age. However, the research evidence on the risk factors for CHD-related disability is sparse (Cruise et al, 2015). The CARDI-funded project examined several risk factors: smoking, high body mass index (BMI), physical inactivity, diabetes and depression and presented results under several headings, including region, sex, age and SEP.

## Methodology

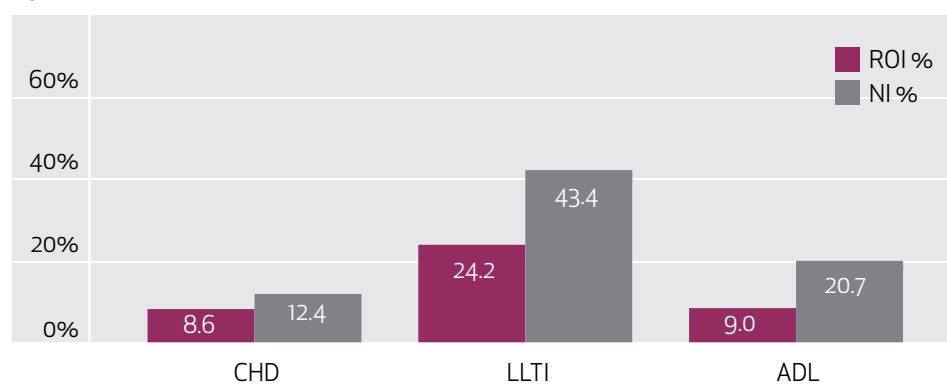
Data on CHD-related disability and its risk factors were obtained for ROI from The Irish Longitudinal Study on Ageing (TILDA, 2011) which surveyed 8,162 people aged 50 and older between October 2009 and February 2011. For NI the source was the Northern Ireland Health Survey (NIHS) which included 2,020 people aged 50+ and was collected in 2010/11 (DHSSPS, 2011).

People were deemed to have CHD if they reported having had either a heart attack or angina. Disability was defined mainly by limiting long-term illness (LLTI)<sup>1</sup> i.e. respondents reporting firstly that they had a long-term illness, disability or infirmity and secondly that the illness limited their activities in any way. An alternative measure of disability was limitations in any one of the activities of daily living (ADL) e.g. dressing, feeding, washing or using the toilet. In addition, the report presented data on disability-free life expectancy at various age groups and by sex and SEP in both NI and ROI.

## Prevalence of CHD, LLTI and ADL limitations

People aged 50+ in NI are much more likely to have CHD than those in ROI, 12% compared with 9%, as shown in Figure 1. Among people aged 50+, the prevalence of LLTI in NI is 43%, compared with 24% in the ROI (80% higher). The difference between North and South is wider still in ADL limitations; 21% of NI people aged 50+ reported an ADL difficulty, well over twice the rate in ROI (9%).

**Figure 1: Coronary heart disease, limiting long-term illness and limitations in activities of daily living among people aged 50+** Cruise et al, 2015



1. LLTI is the main measure of disability in the full report. The questions on LLTI and disability are almost identical in TILDA and NIHS. The full report also used activities of daily living as a measure of disability and the findings were similar to those for LLTI.

The main focus of the report is on people with both CHD and related disability. The report first sets out the prevalence of CHD-related disability (based on LLTI) by various demographic and social characteristics (Cruise et al, 2015). As Figure 2 shows, men are more likely to be affected than women in both NI and ROI and rates of CHD-related disability increase with age (from 4% for NI people in their fifties to 15% for those aged 80+ and from less than 2% to 8% for ROI people in the same age groups).

The medium SEP groups have the lowest disability rates in both NI and ROI. Older people in the lowest SEP have substantially higher rates of disability than others e.g. 11% compared with 8% in high SEP in NI and 5% compared with 3% in ROI. Another feature of Figure 2 is that the prevalence of CHD-related disability is between two and three times higher in NI than ROI for all the categories listed.

**Figure 2: CHD-related disability (based on LLTI) among people aged 50+ by category** Cruise et al, 2015

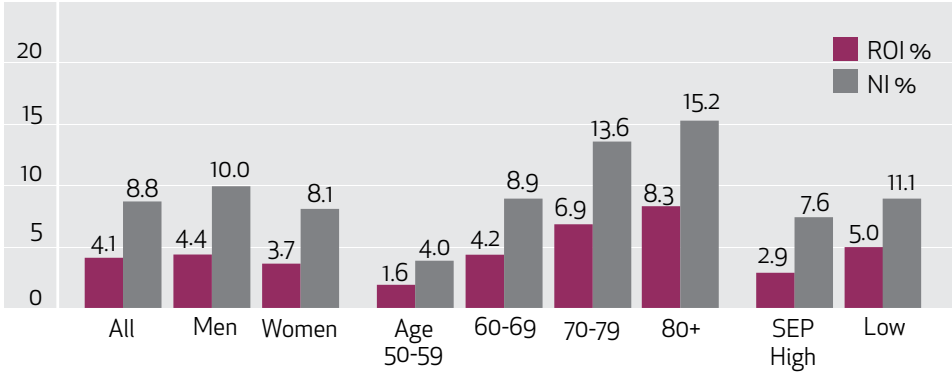
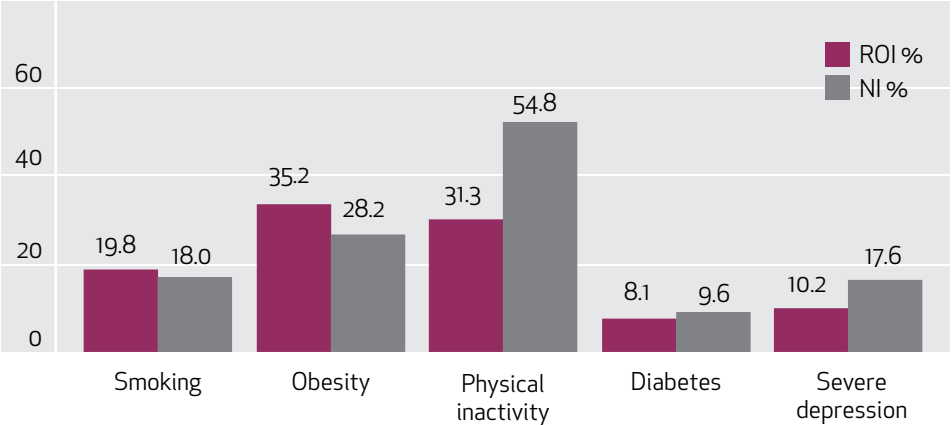


Figure 3 shows the overall prevalence of the five risk factors among people aged 50+ in both NI and ROI. Smoking rates are higher in ROI than NI (though male rates are almost identical whereas 20% of older women in ROI smoke and 17% in NI). Obesity in the 50+ age group is also more common in ROI 35% compared with 28%. The other three risk factors are more severe in NI than in ROI. NI has somewhat higher rates of diabetes (10% v 8%) and the prevalence of physical inactivity (55% v 31%) and severe depression (18% v 10%) are about three-quarters higher in NI than in ROI. These figures confirm the findings of other CARDI-funded research examining physical activity, disability and depression (Murtagh, Murphy, Murphy, Woods, & Lane, 2014) (Scarlett, King-Kallimanis, Young, Kenny, & O’Connell, 2014) (Kelleher, Hickey, Conroy, & Doyle, 2014).

**Figure 3: Smoking, obesity, physical inactivity, diabetes and severe depression among people aged 50+** Cruise et al, 2015



## Population attributable fractions (PAFs)

A useful feature of the report is the use of population attributable fractions (PAFs). These show the amount by which CHD-related disability could be reduced for each risk factor if the risk factor exposure was removed.

### Population attributable fractions (PAFs)

PAFs are defined as 'the proportional reduction in population disease or mortality that would occur if exposure to a risk factor were reduced to an alternative ideal exposure scenario' (World Health Organization, 2009).

In this report a PAF provides an estimate of how much CHD-related disability could be reduced if a risk factor were removed e.g. in the case of diabetes a PAF of 11 means CHD-related disability could be reduced by 11% if the group involved did not have diabetes.

Overall PAFs are shown for ROI and NI in Figure 4. The PAFs for smoking are similar and indicate that just over 6% of CHD-related disability could be avoided if the respondent was not a current smoker. Diabetes accounts for a similar proportion of CHD-related disability as smoking, around 6-7%. Eliminating obesity would have a larger impact on such disability than either smoking or diabetes, around 11% in NI and 14% in ROI. The two remaining conditions are by far the most substantial. CHD-related disability among people aged 50+ could be reduced by 25% in NI and 16% in ROI if severe depression were eliminated and by 40% in NI and 28% in ROI if nobody was physically inactive.

**Figure 4: Amount by which CHD-related disability could be reduced if condition was not present (PAFs)** Cruise et al, 2015

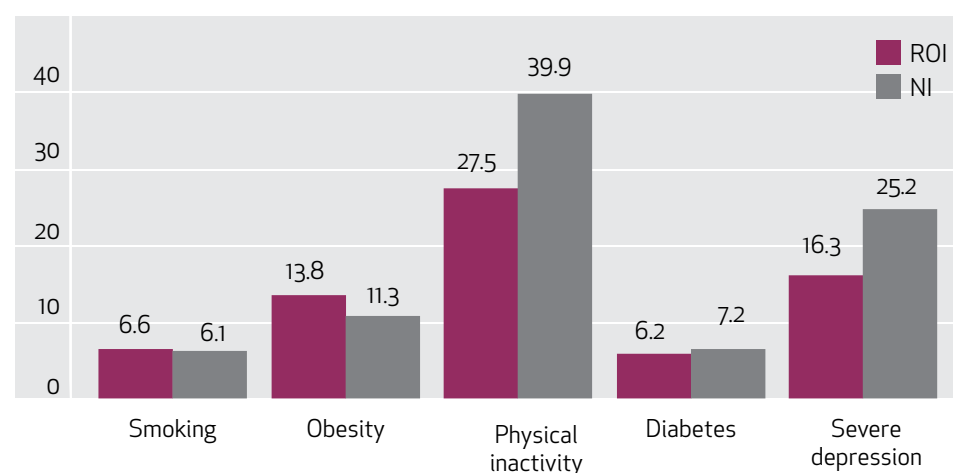


Table 1 shows the PAFs in greater detail. In the case of smoking, the potential reduction in CHD-related disability for women is twice as high as for men both North and South (10% women v 4% men in ROI and 8% v 4% in NI). Similarly, the potential reduction is much greater for people aged 50-64 than for those aged 65+, especially in NI (9% v 3%). This reflects the fact that smoking rates are much higher among those aged 50-64. The PAFs for diabetes are higher for those aged 65+ than for those aged 50-64. There are no significant social class (SEP) differences.

**Table 1: Population attributable fractions (PAFs) for risk factors by selected category for people aged 50+** Cruise et al, 2015

	ROI	NI		ROI	NI
Smoking			Diabetes		
Men	3.6	3.6	Age 50-65	5.2	6.0
Women	9.6	8.4	Age 65+	7.8	8.8
Age 50-64	8.3	8.6	High SEP	6.2	7.6
Age 65+	3.7	2.8	Low SEP	6.6	7.3
All	6.6	6.1	All	6.2	7.2
Obesity			Severe depression		
Men	16.4	14.4	Men	14.0	26.2
Women	10.6	8.4	Women	17.3	23.3
Age 50-64	27.7	24.1	Age 50-64	25.2	41.1
Age 65+	9.5	7.4	Age 65+	12.6	15.7
High SEP	13.4	10.8	High SEP	4.3	10.8
Low SEP	27.5	24.9	Low SEP	18.4	32.9
All	13.8	11.3	All	16.3	25.2
Physical inactivity					
Age 50-64	24.5	37.0			
Age 65+	32.0	43.5			
All	27.5	39.9			

Note: Results which must be treated with caution are excluded

If obesity was eliminated the reduction in CHD-related disability for men would be substantially higher than for women in both NI (14% men v 8% women) and ROI (16% men v 11% women) and the improvement for people aged 50-64 would be three times greater than for older people if obesity were eliminated (28% for ages 50-64 v 10% for age 65+ in ROI; and 24% v 7% in NI). There are also notable social class differences with people in low SEP having a PAF of 27.5% in ROI compared with 13% in high SEP; in NI CHD-related disability among people in low SEP could be reduced by 25% if no respondents were obese, compared with 11% in high SEP.

Different gender patterns exist in severe depression with the potential reduction in CHD-related disability greater for women than men in ROI and vice versa for NI. There are marked differences by age group, especially in NI, where a potential reduction of 41% is possible in the 50-64 age range compared with 16% among those aged 65+; in ROI the figures are 25% and 13%. There are also very large social class differences. Among those in low SEP in ROI, CHD-related disability could be reduced by 18% compared with 4% in high SEP. In NI, disability among those in the lowest SEP could be reduced by one third (33%) if the respondents were not severely depressed; the reduction for people in high SEP could be 11%.

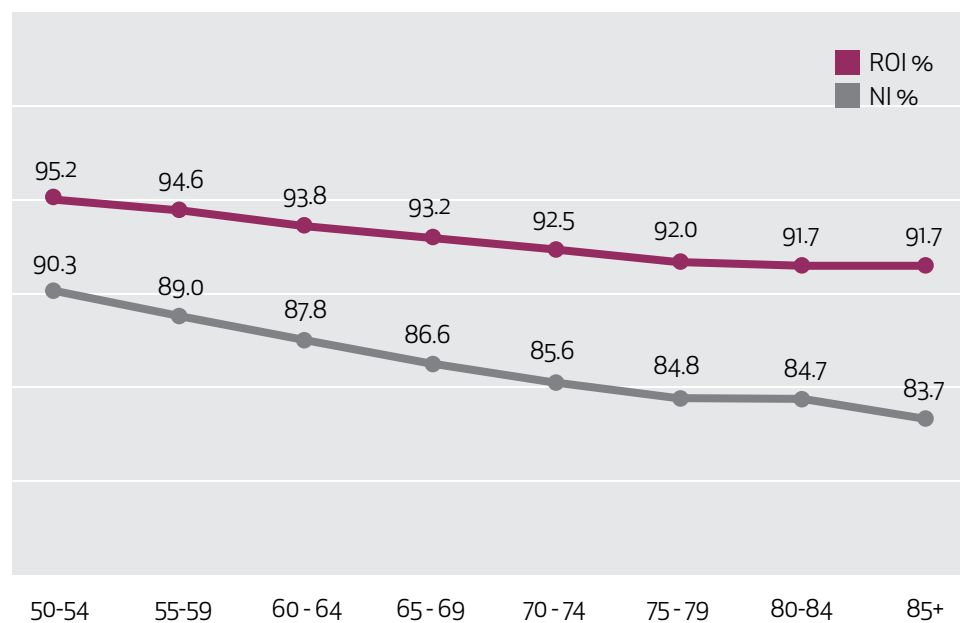
Physical inactivity is the most significant factor for all age groups. The potential benefits of exercise are greater for people aged 65+ than for those aged 50-64: 32% v 24.5% in ROI and 43.5% v 37% in NI.

## Disability-free life expectancy

Total life expectancies are broadly similar in ROI and NI but the higher prevalence of CHD-related disability means that older people in NI can expect to spend less of their remaining life free from CHD-related disability than those in ROI. This is illustrated in Figure 5 by five-year age bands. It is clear from this that the decline in disability-free life expectancy (DFLE) is sharper in NI than in ROI. For example, among people aged 50-54, the difference between ROI and NI is five percentage points, whereas the difference among those aged 85+ is eight percentage points.

**Figure 5: % of life expected to be free of CHD-related disability by age group (based on LLTI)**

Cruise et al, 2015



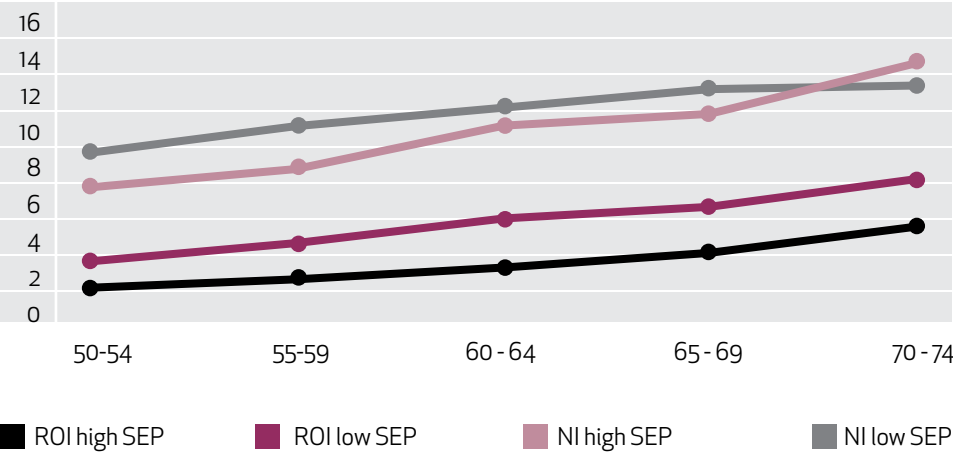
Examining the data by gender, NI men have the lowest percentage of life without CHD-related disability, followed by NI women. The next group is ROI men and then ROI women have a slightly higher DFLE, though ROI men and women aged 80-84 and 85+ are almost identical. The improvement in DFLE for ROI men after age 75-80, followed by a sustained level of DFLE (suggesting a 'survival of the fittest' factor), is not mirrored in NI; there men also improve between the ages of 75-79 and 80-84 but then decline (Cruise et al, 2015). For women in both parts of Ireland, the pattern is one of gradual decline in DFLE, though the rates for ROI women hold up between 80-84 and 85+ while those for NI women continue downwards.<sup>2</sup>

2. Taking all disabilities into account traditionally women fare worse than men. McGee et al (2005) found that in ROI 12% of women and 8% of men had severe disability and in NI the figures were 27% of women compared with 18% of men.



People in low SEP groups had lower life expectancies, lower DFLEs and higher proportions of remaining life lived with disability. These differences existed for each age group and for both parts of Ireland though the socio-economic differences were greater in ROI. In NI people in the highest SEP aged 70-74 can expect to spend slightly more years with disability than those in low SEP. Figure 6 shows the proportion of life expected to be spent with disability by age group up to 70-74 (In NI data on socio-economic position is not given for people aged 75+).

**Figure 6: % of life expected to be spent with CHD-related disability by SEP, age groups 50-74** Cruise et al, 2015



### Policy background

The governments in both NI and ROI, along with international bodies and public health agencies, have policies to support people with disabilities and to provide interventions for frail older people who are likely to become disabled (Scarlett et al, 2014). The updated strategy in ROI *Changing Cardiovascular Health: National Cardiovascular Health Strategy 2010-2019* (Department of Health, 2010) sets out a policy to prevent, detect and treat cardiovascular diseases and to put in place an integrated and quality-assured approach to their management. It considers risk factors including smoking, physical inactivity and obesity. It notes that socio-economic inequality is severe both in the general population and among people aged 65+ and that the gap appears to be widening (Department of Health, 2010, p. 50). The *Positive Ageing Strategy* notes that the cumulative lifetime disability for those who smoke, are obese and do not exercise is four times as great as for those who are a healthy weight, exercise and do not smoke (Department of Health, 2013).

In NI the *Service Framework for Cardiovascular Health and Wellbeing* details 42 standards to be achieved was published in 2014. This revision of an earlier 2009 document refers to a number of specific conditions (e.g. stroke, hypertension, angina and CHD) and also to some of the risk factors considered in this report such as smoking and physical inactivity (DHSSPS, undated). The overall health strategy states that people in lower socio-economic groups and with low levels of education are more likely to be affected by risk factors such as smoking, poor diet and lack of regular exercise (DHSSPS, 2014).

## Policy implications

Population projections show a growing ageing population on the island of Ireland in the coming years; therefore there is likely to be a much larger number of people with CHD and CHD-related disability. Although governments in NI and ROI have general and specific policies on cardiovascular health only a small proportion of the health budgets is allocated to preventative programmes at the population level (Balanda et al, 2010). This report argues that:

This, coupled with the projected costs incurred as a result of increased health and social care needs for those experiencing CHD and CHD-related disability, suggests that governments should be acting now to ensure provision can be met, and to ensure that any proposed welfare reforms will not disadvantage those with CHD and CHD-related disability. For example, cardiovascular disease (CVD) is one of the most common conditions for which disability benefit is claimed in NI. People whose daily living or mobility activities are restricted due to CVD-related disability have a real need for welfare support, and future demand for welfare assistance for CVD-related disability is likely to increase due to an increasing and ageing population... It is therefore imperative to gain greater understanding of the implications of [welfare reform] to ensure that appropriate financial support is reaching those who need it most (Cruise et al, 2015: pp39-40).

Cruise et al suggest that increasing levels of physical activity and reducing body mass index should be the focus of public health initiatives to reduce CHD-related disability. Taking a life-course approach, initiatives are needed both for those already experiencing CHD and for younger people so that they can avoid such disability in their later years.

The study also demonstrated absolute and relative inequalities in life expectancies and DFLEs across all age groups, especially in ROI, and highlights the need to narrow the inequality gap. There are different views on the most effective approach i.e. a population level versus individual approaches and a view that approaches that work with one socio-economic group may be ineffective for another. Balanda et al (2010) have advocated that policy needs to adopt a social determinants of health approach in order to address the social, socio-economic and social environmental issues that underpin unhealthy lifestyles and behaviours (Cruise et al, 2015: p42).

There is also a rural-urban dimension and public transport issues which differ in NI and ROI. In NI, the cities of Belfast and Derry have considerably higher rates of CHD at age 65+ than the rest of NI. By contrast Dublin has lower rates of CHD than the rest of ROI. Cruise et al notes that these different patterns have implications for access to services by rural and isolated older people, especially in ROI, and thus varying requirements for effective public transport.

## Conclusion

Prevalence of CHD and disability among people aged 50+ is much higher in NI than in ROI and much higher among people in low compared with high SEP. Likewise the prevalence of CHD-related disability is much higher in NI and among people in low SEP. This report considers some of the risk factors for CHD-related disability, namely smoking and obesity, which are more common in ROI, and physical inactivity, diabetes and severe depression, for which rates are higher in NI. In most cases too, the risk factors are more prevalent among people in low SEP.

## Bibliography

- ▶ Balanda, K., Barron, S., Fahy, L., & McLaughlin, A. (2010). Making Chronic Conditions Count: Hypertension, Stroke, Coronary Heart Disease, Diabetes. Institute of Public Health in Ireland.
- ▶ Bennett, K., Hughes, J., Jennings, S., Kee, F., & Shelley, E. (2013). Comparing the decline in coronary heart disease and stroke mortality in neighbouring counties with different healthcare systems. *Heart*, 99, 1179-1184.
- ▶ Cruise, S., Hughes, J., Bennett, K., Kouvonen, K., & Kee, F. (2015). Understanding disability in older heart disease patients in Ireland. Belfast: CARDI and Queen's University Belfast.
- ▶ Department of Health. (2010). Changing Cardiovascular Health: National Cardiovascular Health Strategy 2010-2019. Dublin: Department of Health.
- ▶ Department of Health. (2013). Positive Ageing - Starts Now. The National Positive Ageing Strategy. Dublin: Department of Health.
- ▶ Department of Health, Social Services and Public Safety. (2014). Making Life Better: a whole system strategic framework for public health 2013-2023. Belfast: DHSSPS.
- ▶ DHSSPS. (2011). Health Survey Northern Ireland 2010/11. Belfast: Department of Health, Social Services & Public Safety.
- ▶ DHSSPS. (2012). Fit and Well. Changing Lives 2012-2022. A 10-year Public Health Strategic Framework for Northern Ireland. Belfast: Department of Health, Social Services and Public Safety.
- ▶ DHSSPS. (2014). Making Life Better: a whole system strategic framework for public health 2013-2023. Belfast: DHSSPS.
- ▶ DHSSPS. (undated). Service Framework for Cardiovascular Health and Wellbeing April 2014- March 2017. Belfast: Department of Health, Social Services and Public Safety.
- ▶ Kelleher, C., Hickey, A., Conroy, R., & Doyle, F. (2014). Does pain mediate or moderate the relationship between physical activity and depressive symptoms in older people? Dublin: CARDI / Royal College of Surgeons in Ireland.
- ▶ McGee, H., O'Hanlon, A., Barker, M., Hickey, A., Garavan, R., Conroy, R., O'Neill, D. (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.
- ▶ Murtagh, E., Murphy, M., Murphy, N., Woods, C., & Lane, A. (2014). Stay Active: the physical activity, ageing and health study. Dublin: CARDI and Mary Immaculate College.
- ▶ Scarlett, S., King-Kallimanis, B., Young, I., Kenny, R., & O'Connell, M. (2014). Frailty and disability in Ireland. Dublin: CARDI and TCD.
- ▶ TILDA. (2011). Fifty Plus in Ireland 2011: First results from the Irish Longitudinal Study on Ageing. Dublin: TILDA.
- ▶ World Health Organization. (2009). Global Health Risks: Mortality and burden of disease attributable to selected major risks. Geneva: WHO.

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