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# Measures of self-reported morbidity according to age, gender and general medical services eligibility in the national survey of lifestyles, attitudes and nutrition

CC Kelleher, J Harrington, S Friel

Centre for Health Promotion Studies, Department of Health Promotion, Clinical Sciences Institute, National University of Ireland, Galway, Ireland

## Abstract

**Background** The survey of lifestyles, attitudes and nutrition (SLAN) is a national representative sample of 6,539 adults.

**Aims** To report on both global and disease specific measures of self-reported morbidity according to age, gender and medical card status.

**Methods** Reported rates of morbidity are given for angina, heart attack, stroke, raised blood pressure, cholesterol, diabetes mellitus and for other general conditions as well as difficulty with hearing and glasses/contact lens use. Stratified chi-squared analysis of categorical variables was conducted and logistic age adjusted regression model with general medical services (GMS) eligibility as the dependent variable.

**Results** All conditions were more prevalent after the age of 45 years and showed a continuing age gradient. There were highly statistically significant inverse morbidity patterns according to GMS status among both men and women. Only reported raised cholesterol level was higher among the more affluent (13.5% males and 13.3% females over 45 years without a medical card, compared with 7.3% and 9.5% card holders respectively), one suggested explanation is the lack of access to means-tested screening.

**Conclusions** There is considerable morbidity in the Irish population, particularly among GMS card holders.

## Introduction

Health surveillance data have not been routinely available in the Republic of Ireland, even though the mortality profile of the Irish population is poor by international standards. For instance, rates of coronary heart disease stand at around double those of the European Union as a whole,<sup>1</sup> with relatively poor life expectancy overall among men and women, and higher than average rates of some cancers.<sup>2</sup> In epidemiological studies, reported measures of morbidity can serve as a useful proxy for examination data. Simple, subjective global measures of self-rated health on a four or five point Likert scale have been shown repeatedly in prospective epidemiological studies to predict mortality patterns in such populations.<sup>3,4</sup> Measures of self-reported, disease specific morbidity have also been employed in large scale surveillance projects like monitoring trends and determinants in cardiovascular disease (MONICA) as a means of assessing trends for these conditions and for making between-country comparisons.<sup>5</sup>

In this paper, we report on the self-reported rates of both global and general health status and disease specific morbidity for selected conditions, collected as part of the national representative SLAN, whose main findings have already been published.<sup>6</sup>

## Subjects and methods

The Department of Health and Children commissioned the national adult SLAN. Data were collected nationwide during the summer of

1998. The survey methodology has been described in detail elsewhere. In brief, a random, multistage sample of individuals in selected urban and rural district electoral divisions representative of the 26 counties in the Republic of Ireland was identified from the electoral register. Respondents received a postal questionnaire with a pre-reply envelope specially designed and piloted for the study. A second questionnaire was posted to initial nonrespondents and, in turn, these were followed up with a home visit to collect (where possible) further non-returned questionnaires.

The final questionnaire contained detailed sections on lifestyle risk factors including diet and sociodemographic information. In addition, respondents were asked to rate their health as excellent, very good, fair, poor and very poor in a closed five category option. They were asked to rate their quality of life as very good, good, fair, poor or very poor. Thirdly they were asked to rate their satisfaction with their health on a five point scale from very satisfied to very dissatisfied. Respondents were also asked whether they had ever been told by a doctor that they had any one of several medical conditions; that is angina, a heart attack, raised blood pressure, stroke, diabetes, raised cholesterol or any other condition.

Finally respondents were asked whether they needed to wear glasses or contact lenses for reading or had difficulty with hearing. For the purposes of these analyses, responses to these questions are categorised according to age, gender and eligibility for GMS. (The latter factor having been found in the main analysis to be highly related to socioeconomic circumstances and to predict differences in reported lifestyle variables.<sup>6</sup>)

**Table 1. Age and gender distribution of respondents told by their doctor that they had any of the various conditions (% within age group also given)**

	Male total (n=2,195)				Female total (n=2,509)			
	All n (%)	30-45 years n (%)	46-64 years n (%)	65 years + n (%)	All n (%)	30-45 years n (%)	46-64 years n (%)	65 years + n (%)
Angina	113 (5.1)	7 (0.7)	32 (4.4)	74 <sup>c</sup> (16.1)	87 (3.5)	4 (0.3)	21 (3.2)	62 <sup>c</sup> (11.5)
Heart attack	76 (3.5)	5 (0.5)	27 (3.7)	44 <sup>c</sup> (9.6)	36 (1.4)	2 (0.2)	10 (1.5)	24 <sup>c</sup> (4.4)
High BP	292 (13.3)	53 (5.3)	120 (16.5)	119 <sup>c</sup> (25.9)	400 (15.9)	77 (5.8)	140 (21.6)	183 <sup>c</sup> (33.8)
Stroke	33 (1.5)	1 (0.1)	7 (1.0)	25 <sup>c</sup> (5.4)	29 (1.2)	3 (0.2)	8 (1.2)	18 <sup>c</sup> (3.3)
Diabetes	69 (3.1)	10 (1.0)	24 (3.3)	35 <sup>c</sup> (7.6)	60 (2.4)	13 (1.0)	19 (2.9)	28 <sup>c</sup> (5.2)
High chl	178 (8.1)	48 (4.8)	100 (13.8)	30 <sup>c</sup> (6.5)	169 (6.7)	29 (2.2)	73 (11.2)	67 <sup>c</sup> (12.4)
Other	192 (8.7)	69 (6.8)	67 (9.2)	56 <sup>b</sup> (12.2)	277 (11.0)	127 (9.6)	69 (10.6)	81 <sup>b</sup> (15.0)

<sup>a</sup>Significant difference at p<0.05 across age groups <sup>b</sup>significant difference at p<0.01 across age groups <sup>c</sup>significant difference at p<0.001 across age groups

**Table 2. Numbers of male and female respondents over 45 years of age told by their doctor that they had various health conditions, categorised by gender and GMS. Percentages in brackets**

Condition	Male≥45 years Total (n=1,243)			Female≥45 years Total (n=1,266)		
	All	GMS n (%)	Non-GMS n (%)	All	GMS n (%)	Non GMS n (%)
Angina	99 (8.5)	63 (13.9)	36 (5.0) <sup>c</sup>	79 (6.6)	60 (10.6)	19 (3.1) <sup>c</sup>
Heart attack	71 (6.1)	46 (10.1)	25 (3.5) <sup>c</sup>	30 (2.5)	19 (3.4)	11 (1.8)
High BP	232 (19.9)	104 (22.9)	128 (18.0) <sup>a</sup>	310 (26.1)	193 (34.1)	117 (18.8) <sup>c</sup>
Stroke	33 (2.8)	20 (4.4)	13 (1.8) <sup>b</sup>	23 (1.9)	17 (3.0)	6 (1.0) <sup>b</sup>
Diabetes	60 (5.1)	31 (6.8)	29 (4.1) <sup>a</sup>	44 (3.7)	29 (5.1)	15 (2.4) <sup>b</sup>
High cholesterol	129 (11.1)	33 (7.3)	96 (13.5) <sup>b</sup>	137 (11.5)	54 (9.5)	83 (13.3) <sup>a</sup>
Other	121 (10.4)	57 (12.6)	64 (9.0) <sup>a</sup>	149 (12.5)	75 (13.3)	74 (11.9)
Wear glasses	819 (71.9)	320 (72.4)	499 (71.6)	961 (83.1)	466 (85.5)	495 (81.0) <sup>a</sup>
Difficulty hearing	487 (42.5)	215 (48.4)	272 (38.8) <sup>c</sup>	448 (38.9)	256 (47.5)	192 (31.4) <sup>c</sup>

<sup>a</sup>Significant difference at p<0.05 across GMS groups <sup>b</sup>significant difference at p<0.01 across GMS groups <sup>c</sup>significant difference at p<0.001 across GMS groups

We examined data firstly in all age categories and then only in those 45 years of age or older. A stratified categorical statistical analysis was undertaken by means of chi-squared tests. A binary logistic regression model, adjusted for age, was also constructed to assess influence of morbidity on GMS status. Levels of significance at 5% or less are reported.

## Results

The overall response rate of eligible participants to SLAN was 62% (n=6,539) and was representative of the general population, as compared with census data.<sup>6</sup> Of these, 2,355 people were aged 45 years or over. Just over half (1,188) of these were women and 43.3% (1,020) were GMS medical cardholders. The age and gender distribution of respondents reporting or not the various medical conditions is shown in Table 1. There were relatively few self-reported cases among those <45 years old, with a prevalence, for instance, of diabetes around 1% in both sexes. There were highly significant age trends for all cardiovascular conditions among both men and women; the prevalence was higher among men compared with women (all p<0.01).

Table 2 shows the distribution of self-reported conditions according to gender and GMS eligibility in those over 45 years

of age only. In the case of men, the prevalence of all cardiovascular, other conditions and hearing difficulties was higher in GMS respondents. The pattern in women was similar, though failing to reach statistical significance in the case of both reported heart attack and other medical conditions. GMS women respondents were more likely to report the wearing of glasses or contact lenses and to have difficulties with hearing.

The pattern of reported cholesterol measurement was in contrast to other cardiovascular conditions, with GMS cardholders being less likely to have been told by their doctor that they had a raised cholesterol level. The percentage of those 108 respondents over 45 years with reported diabetes, overall and according to gender, who reported having, in addition to diabetes, any cardiovascular or other health-related problem is shown in Table 3. It can be seen that rates for all conditions are markedly higher than in the sample as a whole, as compared for instance with findings in Table 1. In Table 4, the age-adjusted odds of reporting ill health if a GMS cardholder is given for each condition, showing that reported high cholesterol continues to be less frequent among medical cardholders.

In Table 5, the inter-relationship is presented between reported disease specific morbidity in both males and females >45 years and the three more global measures (self-rated

**Table 3. Percentage of respondents who reported being told by their doctor that they had diabetes, plus any one other condition**

Condition	All n (%)	Male ≥45 years n (%)	Female ≥45 years n (%)
Angina	17 (15.7)	9 (14.8)	8 (17.0)
Heart attack	10 (9.3)	6 (9.8)	4 (8.5)
High BP	46 (42.6)	24 (39.3)	22 (46.8)
Stroke	8 (7.4)	5 (8.2)	3 (6.4)
High chl	27 (25.0)	11 (18.0)	16 (34.0) <sup>a</sup>
Other	14 (13.0)	7 (11.5)	7 (14.9)
Wear glasses/ contacts	90 (84.1)	47 (77.0)	43 (93.5) <sup>a</sup>
Difficulty hearing	52 (46.8)	28 (45.9)	24 (52.2)

<sup>a</sup>Significant difference at p<0.05 between males and females

general health, quality of life and satisfaction with health). Overall, a majority of respondents with self-reported angina, heart attack, stroke and diabetes rated their health as fair or poor and this was considerably higher than for the general population of the same age.<sup>6</sup> Women were slightly more likely than men to rate their health poorly in most categories.

Overall, those with risk factors like hypertension or raised cholesterol were not as pessimistic about their health as those with established disease. Levels of dissatisfaction with health status were appreciable for all categories of respondents, but lower in magnitude than for poor self-rated health and with a less marked gender gap. Reported poor or very poor quality of life followed a similar pattern, but with prevalence rates of considerably lower magnitude again, compared with the other two variables.

## Discussion

These data provide for the first time in Ireland a national representative population profile that will enable future trends in morbidity to be measured. The only previously collected data on measures of cardiovascular morbidity were regional, as part of the Kilkenny Health Project.<sup>7</sup> Recently published findings on diet and prevalence of obesity in both parts of Ireland indicate rapid trends in weight gain but the sample was not large enough to assess trends according to socioeconomic group.<sup>8</sup> The reported rates of heart attack are very similar to those among men in the earlier project, though rates of angina are a little higher. It is likely that undetected hypertension rates would be considerably higher. Estimates from the Health Survey for England put rates of mild hypertension at 20%.<sup>9</sup> Even though the information on diabetes was not confirmed or validated, the overall prevalence rate of about 2% (predominantly type II non-insulin-dependent diabetes) is in keeping with other recent estimates for diagnosed disease in a general population.<sup>9</sup> The trends related to age are as might be expected and indeed, are reassuring of both a reasonably robust and representative measure of population prevalence. The higher cardiovascular morbidity among those with diabetes is confirmed here and is an unmet need that must be addressed.<sup>10</sup> It is well established that there is a cluster pattern between diabetes mellitus and cardiovascular risk factors<sup>11</sup> and the rates of this condition are likely to rise, particularly as patterns of increased overweight and physical inactivity are likely to become more prevalent.<sup>1,5,7,8,12</sup> Again, the rate in the Health Survey for England is almost exactly the same at 2.3% of those screened and this also demonstrates the considerable unmet need for cardiovascular intervention, particularly for

**Table 4. Binary logistic regression odds ratio (95% CI) of GMS status as a predictor of various reported health conditions among SLAN respondents over 45 years**

	Males>45		Females >45	
	OR	95% CI	OR	95% CI
Angina	1.896 <sup>a</sup>	[1.199-2.999]	2.418 <sup>a</sup>	[1.377-4.245]
Heart attack	2.327 <sup>a</sup>	[1.356-3.994]	1.296	[0.576-2.918]
High bp	1.066	[0.778-1.460]	1.760 <sup>a</sup>	[1.321-2.343]
Stroke	1.523	[0.702-3.306]	1.976	[0.727-5.367]
Diabetes	1.363 <sup>a</sup>	[0.776-2.392]	1.911	[0.971-3.760]
High chl	0.574 <sup>a</sup>	[0.371-0.888]	0.573 <sup>a</sup>	[0.386-0.851]
Other conditions	1.319	[0.880-1.978]	0.896	[0.615-1.305]
Wear glasses/ spectacles	0.677 <sup>a</sup>	[0.504-0.910]	0.856	[0.605-1.211]
Difficulty hearing	1.184	[0.914-1.534]	1.632	[1.258-2.118]

Model adjusted for age.  
Dependent variable health condition 1=presence and 0=none  
Covariate GMS where 1=GMS and 0= non GMS  
<sup>a</sup>Denotes statistically significant

hypertension and raised cholesterol.<sup>13</sup>

A key finding is the strong relationship between GMS eligibility and the various measures of ill health. This confirms reports of previous smaller scale or more localised studies in this country<sup>14,15,16</sup> and is in keeping with international literature showing a strong gradient of morbidity related to disadvantage.<sup>17,18,19</sup> There are a number of explanations for this pattern. First, GMS eligibility is both means- and age-related and these factors are associated with a higher probability for ill health. Second, GMS eligibility is highly correlated at individual and regional level with measures of deprivation such as socioeconomic status, education level, tenure and number in household.<sup>20</sup> Third, there are considerable lifestyle variations in classical behavioural factors like smoking, exercise and fruit and vegetable consumption according to social circumstances.<sup>6</sup>

The extent to which having a medical card influences health service utilisation patterns has long been debated since the introduction of a two-tiered general medical service in 1970.<sup>21,22</sup> The balance of evidence suggests that high primary care utilisation rates reflect real illness patterns and are not simply a manifestation of demand created by free access at point of delivery.<sup>14,21</sup> This study adds an important salutary finding to this discussion of equity and access. The inverse trend to reported cholesterol testing may reflect several factors outside the scope of this study since we did not include a question on the reasons for not seeking preventive care.

It is possible that the more affluent and educated have taken steps to have their cholesterol measured through other primary care outlets, including the workplace, as there is known to be a poorer uptake of preventive services among the more disadvantaged.<sup>23</sup> However preventive services do not form part of the GMS presently, an issue that the national cardiovascular strategy document, Building Healthier Hearts and the subsequent task force infrastructure at regional and national levels has sought to address, by recommending systematic assessment of risk factor detection in primary care.<sup>1</sup> For whatever the reasons, as long as those most in need are relatively less likely to avail of proactive intervention, our health service will be deficient, both in the care setting and beyond.

Finally, this report confirms that more global measures of self-rated health status relate to disease specific morbidity ratings, with considerable excess compared with the more

**Table 5. Number of respondents over 45 years (% in brackets) who rate their health adversely according to three different measures, categorised according to gender and whether they reported one of a number of health related conditions**

Conditions	Self-rated health fair or poor			Very dissatisfied/dissatisfied with level of health			Quality of life poor/very poor		
	All n(%)	Male n(%)	Female n (%)	All n (%)	Male n (%)	Female n (%)	All n (%)	Male n (%)	Female n (%)
All respondents									
>45 years	624 (26)	310 (26)	314 (26)	317 (14)	161 (14)	156 (13)	159 (7)	87 (7)	72 (6)
Angina	105 (57)	53 (51)	52 (66)	47 (25)	22 (21)	25 (31)	22 (12)	11 (11)	11 (14)
Heart attack	62 (60)	42 (58)	20 (63)	38 (35)	16 (22)	12 (35)	19 (17)	12 (16)	7 (21)
High blood pressure	221 (39)	94 (39)	127 (40)	104 (18)	40 (17)	64 (20)	46 (8)	18 (7)	28 (9)
Stroke	32 (58)	19 (61)	13 (54)	17 (30)	10 (32)	7 (27)	12 (21)	6 (19)	6 (23)
Diabetes	53 (52)	26 (44)	27 (63)	29 (28)	14 (23)	15 (34)	11 (11)	6 (10)	5 (11)
Raised cholesterol	86 (32)	39 (30)	47 (34)	45 (17)	20 (15)	25 (18)	18 (7)	7 (5)	11 (8)
Other condition	130 (47)	65 (53)	65 (43)	90 (32)	47 (38)	43 (28)	35 (13)	18 (14)	17 (11)
Wear glasses/contacts	509 (28)	243 (29)	266 (27)	251(14)	126 (15)	125 (13)	120 (7)	59 (7)	61 (6)
Difficulty hearing	343 (36)	175 (35)	168 (36)	179 (19)	81 (16)	98 (21)	88 (9)	39 (8)	49 (11)

general population. The considerable international literature on this measure shows how useful it is in predicting longer-term morbidity and mortality in different populations and ethnic groups<sup>3,4,24-26</sup> and Ireland is unlikely to prove an exception. These findings suggest that different domains are being captured by each of the three measures we report on here.<sup>21,22</sup> Respondents with established ill health are more likely, it seems, to rate their general health as fair or poor, but may not necessarily be dissatisfied with this state of health. Nor may they feel it as an interference with their quality of life, particularly if their subjective well-being is good or if the problem has been addressed by treatment. This has important implications for the interpretation of quality of life measures as applied to people with chronic ill health particularly, and reinforces the fact that lay concepts of health and well-being are both sensitive and important.

In conclusion, these data provide coherent evidence of sociodemographic variation in self-reported health status in Ireland, in keeping with findings elsewhere.

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Correspondence to: email: [cecily.kelleher@nuigalway.ie](mailto:cecily.kelleher@nuigalway.ie)