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## RESEARCH REPORT

# Influence of sociodemographic and neighbourhood factors on self rated health and quality of life in rural communities: findings from the Agriproject in the Republic of Ireland

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**Objective:** To examine the influence of sociodemographic and neighbourhood factors on self rated health, quality of life, and perceived opportunities for change (as one measure of empowerment) in rural Irish communities.

**Design:** Pooled data from cross sectional surveys two years apart.

**Setting:** Respondents in four randomly selected rural district electoral divisions with a population size of between 750 and 2000.

**Participants:** 1738 rural dwellers aged 15–93, 40.5% men, interviewed at two time points.

**Main outcome measures:** Determinants of self rated health (SRH), quality of life (QOL), and perceived opportunities for change, rated on a closed option Likert scale and assessed in multivariate logistic regression models.

**Main results:** Overall 23.8% of the sample reported poor SRH, 22.2% poor QOL, and 50.1% low perceived opportunities for change. Low financial security and dissatisfaction with work were each significantly associated with poor SRH (OR = 1.96 (1.50 to 2.56) and 1.54 (1.11 to 2.14)), with poor QOL (OR = 2.04 (1.56 to 2.68) and 1.87 (1.34 to 2.61)). Concern about access to public services was significantly predictive of SRH (OR = 1.47 (1.11 to 1.94)) rather than access to health care (that is, hospital and GP services). There were distinct sex specific patterns and a generational effect for educational status in men. Variables associated with social networks and social support were less strongly predictive of SRH and QOL when economic measures were accounted for.

**Conclusion:** Inter-relations between indicators of health status, wellbeing, and deprivation are not well studied in rural communities. Material deprivation has a direct influence on both health status and quality of life, although immediate sources of support are relatively well preserved.

See end of article for authors' affiliations

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While the relative importance of neo-material and psycho-social influences in determining health inequalities has been debated closely in recent years,<sup>1–2</sup> research has largely focused on urban environments and settings, particularly in developed, industrialised countries. By contrast, our knowledge of rural health needs and inequality is comparatively limited.<sup>3–7</sup> In developing countries issues of fundamental deprivation and access to primary health care are foremost<sup>8</sup> and in more affluent societies like Britain<sup>6</sup> and the United States,<sup>3,5</sup> relative disadvantage through physical and infra-structural inadequacies predominate. The apparently weak link between deprivation and poor health in rural areas in some studies may be attributable to the inappropriateness of existing composite indicators of deprivation more suited to an urban setting.<sup>9–13</sup> An example is car ownership, part of the Townsend deprivation index,<sup>14</sup> which reflects wealth in urban environments but is a transport necessity, regardless of affluence, in many rural areas.

Rural dwellers are arguably disadvantaged because of geographical inaccessibility to health care and other public services.<sup>15–17</sup> The consequences of this include reduced use of preventive services and hospital care because of the high costs and inconvenience of travel<sup>16</sup> and poorer health outcomes later.<sup>17</sup> Such isolation can also be associated with lack of social support for those living and working alone or far from others, speculated to relate to increased suicide rates among rural dwellers.<sup>9</sup> Conversely, dense personal social networks such as close neighbours and family can protect people from stress and contribute to improved health.<sup>18</sup>

Recent debates on the contextual importance of social and human capital<sup>18</sup> suggest that rural settings might have such advantages, through well preserved and integrated social networks and support. Haynes and Gale<sup>11</sup> have shown that social variation in health in rural communities is apparent not at area but at individual household level. Barnett *et al*<sup>10</sup> highlight the importance of exploring individual differences to better understand social variation in health in rural areas. Policies that apply resource allocation according to generic deprivation scores, not accounting for individual characteristics, may fail to address adequately the health needs of rural dwellers. The traditional rural landscape in industrialised economies is rapidly changing however with lengthy commuting patterns and increasing shortages of affordable housing for local people, compounding the complexity of the issues involved.<sup>6</sup>

In Ireland 42% of the population live in rural areas, three times the European average.<sup>19</sup> There is a general shortage of data linking measures of affluence to health in Ireland.<sup>12</sup> This is a basis for the work programme of the Health Research Board funded Unit of Health Status and Health Gain, that seeks to address the determinants of health status in that country.<sup>20–22</sup> We have already pointed out that Ireland is of particular interest in the wider social capital debate, in having highly preserved indicators like family support and yet very poor health profiles.<sup>20</sup> Medical card possession, a means tested entitlement to free general medical service, has served as a proxy for disadvantage and has been shown to be

**Abbreviations:** SRH, self rated health; QOL, quality of life

a consistent predictor of poor health in the general Irish population.<sup>21 22</sup> The prevalence of medical card possession is much higher in rural areas (42%) compared with the general population (31%). Furthermore, because home ownership is very high in Ireland and many people with poor cash flow and low income might possess other assets, including small land holdings, the issue of assessing disadvantage is complex.<sup>12</sup>

Our objective therefore was to examine the influence of sociodemographic and neighbourhood factors on self rated health and quality of life in rural communities in Ireland, as part of an on-going programme of work on these issues.

## METHODS

This analysis comprised survey data at two time points collected as part of the Agriproject health promotion intervention programme in four rural communities in the Republic of Ireland, details of which have been reported previously.<sup>23–26</sup> This was a highly novel project in rural Ireland, one of whose objectives was to report the inter-relationships between social, economic, and working standards as related to measures of health and wellbeing. Carried out over five years (1996–2000), this project comprised two specific

intervention elements, on farm safety in three communities<sup>25</sup> and mental health<sup>26</sup> mainly in one community, based on an initial needs assessment<sup>23</sup> and community consultation process.<sup>24</sup> The four rural communities participating in the study were selected at random in each province of Ireland from a list of rural district electoral divisions with populations of between 750–2000.<sup>25</sup> Both at the outset of the project and after two years a comprehensive interview administered questionnaire survey was undertaken of householders selected for participation. It was aimed to survey at least 250 people in each area on both occasions. Although a comparatively small sample in absolute terms it none the less represented high coverage of the candidate communities. Every second house in the village area and every house in the open countryside from each community were approached by researchers. Any household member over 15 years old was eligible to participate, with a maximum of four per household. Most households put forward only one respondent.

The questionnaire was devised for the project based largely on previously published instruments. It comprised sections on health and safety practice, measures of concern in relation to mental ill health (including help seeking in relation to suicide and depression) as well as information on attitudes to

**Table 1** Distribution of characteristics in 1997 and 1999

Characteristic	1997	1999	Total
[Base category]	% (n)	% (n)	% (n)
<b>Demographic</b>			
Male	39.2 (397)	42.3 (307)	40.5 (704)
[Female]	60.8 (615)	57.7 (419)	59.5 (1034)
Entitlement to medical card			
Yes	44.4 (445)	39.5 (285)	42.3 (730)
[No]	55.6 (557)	60.5 (437)	57.7 (994)
Perceived financial security			
Low	30.7 (309)	27.7 (201)	29.4 (510)
[Medium or High]	75.3 (759)	75.0 (545)	70.6 (1222)
Years lived in area			
<15 years	26.1 (262)	28.5 (206)	27.1 (468)
[16–90 years]	73.9 (742)	71.5 (516)	72.9 (1258)
Marital status			
Single	31.3 (316)	36.9 (268)	33.6 (584)
[Married/Widow/Other]	68.7 (695)	63.1 (459)	66.4 (1154)
Children			
Yes	63.0 (632)	58.6 (416)	61.2 (1048)
[No]	37.0 (371)	41.4 (294)	38.8 (665)
Education			
Primary or lower	29.2 (295)	21.8 (158)	26.1 (453)
[Secondary or higher]	70.8 (714)	78.2 (568)	73.9 (1282)
<b>Personal social networks</b>			
Lack of close neighbours			
Very concerned/Concerned	23.0 (231)	19.5 (141)	21.6 (372)
[Not at all/Not concerned]	77.0 (773)	80.5 (581)	78.4 (1354)
Limited opportunities to meet others			
Very concerned/Concerned	25.4 (255)	24.0 (174)	24.8 (429)
[Not at all/Not concerned]	74.6 (750)	76.0 (550)	75.2 (1300)
<b>External social networks</b>			
Distance to health care			
Very concerned/Concerned	28.5 (288)	30.6 (220)	29.4 (508)
[Not at all/Not concerned]	71.5 (721)	69.4 (498)	70.6 (1219)
Distance to shopping opportunities			
Very concerned/Concerned	12.6 (127)	14.2 (103)	13.2 (230)
[Not at all/Not concerned]	87.4 (883)	85.8 (623)	86.8 (1506)
Lack of public services			
Very concerned/Concerned	35.2 (354)	32.2 (234)	33.9 (588)
[Not at all/Not concerned]	64.8 (652)	67.8 (492)	66.1 (1144)
<b>Psychosocial</b>			
Satisfaction with work			
Very dissatisfied/dissatisfied	14.0 (140)	14.3 (101)	14.1 (241)
[Very satisfied/satisfied]	86.0 (863)	85.7 (604)	85.9 (1467)
<b>Health behaviours</b>			
Smoking			
Smoker/Ex-smoker	44.1 (445)	43.6 (316)	43.9 (761)
[Never smoker]	55.9 (564)	56.4 (409)	56.1 (973)

**Table 2** Percentage low response on self rated health, QOL, and perceived opportunities for change by potential predictive variables

	% With low SRH (n)	% With low self rated QOL (n)	% With low self rated perceived empowerment (n)
Sex			
Male	23.1 (162)	21.2 (148)	46.4 (324)
Female	24.3 (251)	22.9 (236)	52.6 (538)
p	0.566	0.410	0.012
Medical card			
Yes	26.2 (191)	27.2 (198)*	52.1 (376)
No	22.2 (220)	18.6 (184)	48.8 (482)
p	0.052	0.000	0.186
Perceived financial security			
High	18.1 (221)*	16.4 (199)*	44.5 (538)*
Low	37.5 (191)	35.9 (183)	63.4 (321)
p	0.000	0.000	0.000
Years in area			
Shortest time	23.8 (111)	18.2 (85)	50.4 (234)
Other	23.7 (298)	23.5 (294)	49.8 (855)
p	1.000	0.022	0.828
Marital status			
Single	27.7 (161)	25.1 (146)	50.4 (290)
Married/Widow/Other	21.9 (252)	20.7 (238)	50.0 (573)
p	0.009	0.043	0.878
Children			
Yes	22.1 (231)	21.1 (220)	49.3 (513)
No	26.2 (174)	24.0 (159)	51.1 (336)
p	0.054	0.170	0.517
Education			
Primary or less	23.5 (106)	24.7 (111)	48.1 (215)
Secondary or more	23.9 (306)	21.3 (272)	50.9 (647)
p	0.898	0.147	0.323
Lack of close neighbours			
Concerned	24.3 (90)	27.8 (103)	54.7 (202)
Not concerned	23.8 (321)	20.7 (279)	29.1 (658)
p	0.837	0.005	0.060
Opportunities to meet others			
Concerned	28.3 (121)	29.3 (125)*	54.4 (231)
Not concerned	22.4 (290)	19.9 (258)	48.9 (631)
p	0.015	0.000	0.057
Distance to health care			
Concerned	23.3 (118)	23.5 (119)	55.3 (277)**
Not concerned	23.9 (291)	21.6 (262)	48.2 (583)
p	0.804	0.408	0.008
Distance to shops			
Concerned	28.1 (64)	26.6 (61)	52.4 (120)
Not concerned	23.2 (349)	21.5 (323)	49.8 (743)
p	0.113	0.088	0.479
Lack of public services			
Concerned	27.1 (159)	24.5 (143)	55.0 (319)
Not concerned	21.9 (250)	20.9 (239)	47.5 (540)
p	0.017	0.098	0.004
Satisfaction with work			
Satisfied	20.9 (306)*	19.6 (286)*	44.5 (538)*
Not satisfied	39.0 (94)	37.5 (90)	63.1 (321)
p	0.000	0.000	0.000
SRH			
Low	–	40.1 (165)*	46.4 (608)*
High	–	16.6 (218)	62.0 (254)
p	–	0.000	0.000
Self rated QOL			
Low	43.1 (165)*	–	63.5 (244)*
High	18.3 (246)	–	46.2 (616)
p	0.000	–	0.000
Opportunities for change			
Low	29.5 (254)*	28.4 (244)*	–
High	18.2 (156)	16.4 (140)	–
p	0.000	0.000	–
Smoking (tobacco)			
Never	21.6 (209)	20.4 (198)	50.1 (483)
Current/ex smoker	26.5 (201)	24.4 (185)	50.1 (376)
p	0.019	0.047	1.000

\*p&lt;0.003 (with Bonferroni correction of 17).

health and wellbeing more generally, quality of life indicators and sociodemographic information. The two surveys, carried out in 1997 (n = 1007, 39.4% male) and 1999 (n = 1051, 40.8% male) served as a needs analysis and impact

assessment of the interventions respectively. The needs assessment process in the communities highlighted concerns about farm safety and mental health issues and hence these formed the focus of the intervention.<sup>24</sup> The process and

impact findings of these interventions, based particularly in schools, farms, and small scale enterprises, have been reported elsewhere and are not considered further here.<sup>25 26</sup>

For this analysis we wished to examine the influence of social, demographic, and lifestyle factors on self rated health and wellbeing. A series of questions regarding personal social networks and so called external social networks were recorded. Respondents were asked to rate their concern on a five point Likert scale (not at all concerned, not concerned, uncertain, concerned, and very concerned) in relation to lack of close neighbours, limited opportunities to meet others, distance to healthcare facilities, shopping opportunities, and lack of public services. They were also asked to rate their satisfaction with work and with level of financial security (very satisfied, satisfied, uncertain, dissatisfied, and very dissatisfied). The following were also recorded; age last birthday, sex, means tested entitlement to a general medical services card, marital status (single, married, widow, or other), children or not, level of education (primary, secondary, or tertiary). Smoking status (current, former, or never) was included as it is known to relate both to socioeconomic status and health.

We selected three outcome variables, an approach consistent with other analyses conducted as part of the unit for health status and health gain programme. Self rated health (SRH), an established health outcome,<sup>27-40</sup> is a strong predictor of general morbidity and mortality including diverse factors such as poor functional ability, mortality, increased physician visits and hospitalisations, and survival in cancer. SRH has inverse associations with socioeconomic group,<sup>33</sup> level of education,<sup>34</sup> individual affluence,<sup>35</sup> and less consistently, income inequality.<sup>36</sup> The relation between SRH and indicators of deprivation varies according to gender within and between countries.<sup>37-40</sup> We have stratified our analysis by sex in recognition of these differences. Respondents were asked to respond as very satisfied, satisfied, uncertain, dissatisfied, or very dissatisfied with respect to how they felt about their health and physical condition.

Measures of quality of life (QOL) have often been used to measure functional wellbeing and health in groups suffering from chronic illness or specific diseases.<sup>31 32</sup> We use an adaptation of Cantrill's Ladder<sup>41</sup> to evaluate the impact of characteristics like dense social networks and poor public services on rural QOL. Respondents indicated a score from one (as bad as it could possibly be) to ten (as good as it could possibly be) to describe their QOL. The scores were quartiled such that the people with scores in the lowest quartile were classified as having poor QOL.

Self empowerment, the third domain, can be defined as the means, ability, or power people have to change their social reality.<sup>42</sup> Although the concept of personal empowerment is widely used in the literature, particularly by the health promotion movement,<sup>43 44</sup> there is surprisingly little information on well validated measures. Deconstructing these determinants has great significance for the implementation of successful health promotion interventions that require individual and community empowerment as a prerequisite.<sup>44</sup> The determinants of empowerment for change in rural communities are not well delineated, although a person's social circumstance is an important component in some groups.<sup>45</sup> To capture in simple terms a sense of control in relation to their circumstances, respondents in the Agriproject were asked how satisfied they were with opportunities to change things around them that they did not like, a question selected because it was used previously in a rural community survey.<sup>46</sup>

Because the variables used here were not part of the intervention protocol we did not anticipate significant change between the two surveys. As there were no differences in average values at pre-intervention and post-intervention stages (table 1) and no significant between community variations it was therefore decided that it would be acceptable to combine time 1 and time 2 data to increase power for the subsequent analysis. Respondents who participated in both years (n = 312) were removed, resulting in a sample size of 1738 independent observations (40.5% male). While there are small differences between the two

**Table 3** Predictors of poor self rated health in the overall population and in men and women

	Overall		Men		Women	
	Odds ratio (95%CI)	p	Odds ratio (95%CI)	p	Odds ratio (95%CI)	p
Demographic variables						
Age	-	0.000	-	0.000	-	0.000
Male	0.909 (0.696 to 1.186)	0.481	-	-	-	-
With medical card	1.037 (0.788 to 1.365)	0.797	0.937 (0.584 to 1.505)	0.789	1.079 (0.763 to 1.526)	0.669
Dissatisfied with financial security	1.959 (1.502 to 2.555)	0.000	2.036 (1.329 to 3.117)	0.001	2.016 (1.422 to 2.857)	0.000
<15 years in area	0.969 (0.722 to 1.301)	0.834	1.176 (0.719 to 1.922)	0.519	0.860 (0.591 to 1.252)	0.432
Single	1.347 (0.850 to 2.137)	0.205	1.630 (0.762 to 3.486)	0.208	1.259 (0.688 to 2.302)	0.455
With children	1.187 (0.774 to 1.822)	0.431	1.695 (0.805 to 3.572)	0.165	0.955 (0.563 to 1.619)	0.863
Primary school or less	1.203 (0.826 to 1.752)	0.335	1.126 (0.631 to 2.007)	0.688	1.333 (0.804 to 2.209)	0.265
Social network 1						
Concerned, lack of close neighbours	0.811 (0.579 to 1.137)	0.225	0.734 (0.408 to 1.318)	0.300	0.872 (0.574 to 1.324)	0.520
Concerned, limited opportunities to meet others	1.210 (0.879 to 1.665)	0.242	0.897 (0.507,1.587)	0.708	1.461 (0.986 to 2.166)	0.059
Social network 2						
Concerned, distance to health care	0.840 (0.645 to 1.005)	0.554	0.994 (0.545 to 1.467)	0.659	0.746 (0.435 to 0.960)	0.531
Concerned, distance to shopping opportunities	0.880 (1.030 to 0.699)	0.880	0.923 (0.472 to 1.808)	0.816	1.133 (0.699 to 1.835)	0.612
Concerned, lack of public services	1.471 (1.114 to 1.941)	0.006	1.803 (1.158 to 2.807)	0.009	1.269 (0.884 to 1.821)	0.197
Psychosocial						
Dissatisfied with work	1.543 (1.111 to 2.145)	0.010	1.629 (0.956 to 2.776)	0.073	1.476 (0.962 to 2.266)	0.075
Low score on QOL in general	2.506 (1.905 to 3.296)	0.000	2.324 (1.472 to 3.671)	0.000	2.708 (1.907 to 3.844)	0.000
Low perceived empowerment	1.529 (1.185 to 1.973)	0.001	1.903 (1.255 to 2.885)	0.002	1.358 (0.975 to 1.892)	0.071
Health risk behaviour						
Smoker/ex smoker	1.348 (1.045 to 1.739)	0.022	1.793 (1.178 to 2.730)	0.006	1.165 (0.834 to 1.628)	0.371

**Table 4** Predictors of low quality of life in the overall population and men and women

	Overall		Men		Women	
	Odds ratio (95%CI)	p	Odds ratio (95%CI)	p	Odds ratio (95%CI)	p
Demographic variables						
Age	–	0.000	–	0.000	–	0.000
Male	0.889 (0.677 to 1.168)	0.398	–	–	–	–
With medical card	1.360 (1.030 to 1.797)	0.030	1.261 (0.788 to 2.017)	0.333	1.293 (0.908 to 1.842)	0.154
Dissatisfied with financial security	2.043 (1.558 to 2.679)	0.000	1.988 (1.283 to 3.081)	0.002	2.126 (1.491 to 3.030)	0.000
<15 years in area	0.663 (0.484 to 0.909)	0.011	0.671 (0.384 to 1.171)	0.160	0.662 (0.447 to 0.980)	0.039
Single	1.257 (0.781 to 2.024)	0.346	0.785 (0.371 to 1.663)	0.528	1.600 (0.852 to 3.004)	0.144
With children	1.168 (0.752 to 1.812)	0.490	0.698 (0.337 to 1.443)	0.332	1.594 (0.908 to 2.798)	0.105
Primary school or less	1.204 (0.827 to 1.753)	0.332	1.850 (1.044 to 3.277)	0.035	0.931 (0.557 to 1.556)	0.786
Social network 1						
Concerned, lack of close neighbours	1.191 (0.855 to 1.659)	0.302	1.373 (0.780 to 2.416)	0.272	1.103 (0.725 to 1.677)	0.648
Concerned, limited opportunities to meet others	1.490 (1.081 to 2.055)	0.015	1.309 (0.740 to 2.315)	0.355	1.561 (1.046 to 2.330)	0.029
Social network 2						
Concerned, distance to health care	0.876 (0.641 to 1.197)	0.406	1.059 (0.632 to 1.774)	0.827	0.802 (0.539 to 1.192)	0.275
Concerned, distance to shopping opportunities	1.008 (0.678 to 1.497)	0.970	1.596 (0.824 to 3.095)	0.166	0.768 (0.463 to 1.276)	0.309
Concerned, lack of public services	1.054 (0.790 to 1.406)	0.722	0.911 (0.567 to 1.463)	0.700	1.199 (0.829 to 1.733)	0.335
Self rated health	2.488 (1.890 to 3.275)	0.000	2.211 (1.392 to 3.510)	0.001	2.709 (1.909 to 3.845)	0.000
Psychosocial						
Dissatisfied with work	1.870 (1.337 to 2.615)	0.000	1.750 (0.993 to 3.081)	0.053	2.085 (1.360 to 3.194)	0.001
Low perceived empowerment	1.463 (1.126 to 1.901)	0.004	2.130 (1.384 to 3.276)	0.001	1.143 (0.815 to 1.603)	0.439
Health risk behaviour						
Smoker/ex smoker	0.802 (0.618 to 1.040)	0.096	0.839 (0.547 to 1.288)	0.423	0.815 (0.581 to 1.144)	0.237

samples (table 1), particularly in education level of participants, these are unlikely to be a result of the intervention programme.

Before multivariate analysis,  $\chi^2$  tests were used to evaluate the relation between the three dependent indicative measures chosen and potential predictor variables. Exact significance values are reported and additionally a standard Bonferroni correction of 17 was made to adjust the  $\alpha$  level to 0.003 to account for the large number of tests. Binary logistic regression was then carried out using all selected variables to determine the predictors of poor SRH, QOL, and low perceived opportunities for change. All variables were dichotomised (the two lowest points compared with the rest) to facilitate the modelling and interpretation process and cut off points selected are presented clearly in the tables. Three stepwise multivariate logistic regression models were then constructed for each of the three outcome variables, reported overall, adjusting for age and sex and for each sex separately. As each domain was modelled, the other two were included as independent variables. Age was included as a covariate in all the models. SPSS Version 10 was used throughout. All statistical tests were two tailed and 95% confidence intervals are reported for all odd ratios as well as exact p values.

## RESULTS

Overall 23.8% of respondents reported poor SRH, 22.2% poor QOL, and 50.1% low perceived opportunities for change. At bi-variate level (table 2) a number of factors appeared associated with poor SRH, including medical card eligibility, being single, and current smoking. Those concerned about opportunities to meet others and with lack of public services also tended to rate their health poorly. However, none of these factors is significant with Bonferroni adjustment. Those not satisfied with work ( $p<0.0001$ ), with poor QOL ( $p<0.0001$ ), with low perceived financial security ( $p<0.0001$ ), and low perceived opportunities for change ( $p<0.0001$ ) were highly significantly likely to rate their health poorly.

A low self rated QOL tended to be associated with being longer in an area, concern about lack of close neighbours, and among current smokers, but these did not remain significant after Bonferroni correction. Medical card holders ( $p<0.0001$ ), those with poor SRH ( $p<0.001$ ), those with low perceived opportunities for change ( $p<0.0001$ ), those dissatisfied with work ( $p<0.0001$ ), those concerned about opportunities to meet others ( $p<0.001$ ), and with low perceived financial security ( $p<0.0001$ ), were all significantly more likely to report a poor QOL. More women than men tended to report low opportunities for change but this was not significant after Bonferroni correction. Those with low perceived opportunities for change were significantly more likely to report low financial security ( $p<0.0001$ ), work dissatisfaction ( $p<0.0001$ ), poor SRH ( $p<0.0001$ ), and poor QOL ( $p<0.0001$ ).

Tables 3 to 5 contain the results of the overall and sex stratified logistic regression analysis for SRH, QOL, and perceived opportunities for change respectively. Low financial security and dissatisfaction with work each remained strongly associated with the three dependant variables, poor SRH, low QOL, and low perceived opportunities for change after controlling for all other demographic variables. In the case of both men and women low level of financial security doubled the odds of reported poor health (OR 2.036 and 2.016 respectively) and low QOL (OR 1.988 and 2.126). Those with low level of financial security were also more likely to perceive low opportunity for change (OR = 1.621 for men and OR = 2.247 for women). As suggested by the bivariate tests, medical card possession was not independently significant except in the quality of life model (OR = 1.360 overall). Those with a poor SRH were also more concerned about lack of public services (OR = 1.471), more likely to be smokers (OR = 1.348), and to report also low QOL (OR = 2.506). Those with a low QOL were also more concerned about opportunities to meet others (OR = 1.490), more likely to report poor SRH (OR = 2.488), and low perceived opportunities for change (OR = 1.463).

Some gender differences are observed in each of the three domains in the sex specific age adjusted models. For

**Table 5** Predictors of low perceived opportunities for change in the overall population and in men and women

	Overall		Men		Women	
	Odds ratio (95%CI)	p	Odds ratio (95%CI)	p	Odds ratio (95%CI)	p
Demographic variables						
Age	–	0.000	–	0.000	–	0.000
Male	0.830 (0.666 to 1.034)	0.097	–	–	–	–
With medical card	1.025 (0.814 to 1.290)	0.836	1.638 (1.103 to 2.432)	0.014	0.760 (0.568 to 1.017)	0.064
Dissatisfied with financial security	1.952 (1.139 to 1.921)	0.000	1.621 (1.110 to 2.363)	0.012	2.247 (1.636 to 3.086)	0.000
<15 years in area	1.076 (0.844 to 1.371)	0.554	1.270 (0.836 to 1.928)	0.262	0.939 (0.691 to 1.276)	0.687
Single	0.883 (0.605 to 1.289)	0.519	0.840 (0.451 to 1.563)	0.582	0.858 (0.519 to 1.416)	0.549
With children	0.828 (0.585 to 1.171)	0.287	0.719 (0.392 to 1.317)	0.285	0.908 (0.589 to 1.400)	0.662
Primary school or less	0.749 (0.551 to 1.018)	0.065	0.447 (0.276 to 0.726)	0.001	1.101 (0.728 to 1.665)	0.648
Social network 1						
Concerned, lack of close neighbours	1.112 (0.837 to 1.478)	0.463	1.378 (0.842 to 2.254)	0.202	0.990 (0.693 to 1.413)	0.954
Concerned, limited opportunities to meet others	1.043 (0.790 to 1.377)	0.765	0.836 (0.511 to 1.365)	0.473	1.215 (0.860 to 1.716)	0.269
Social network 2						
Concerned, distance to health care	1.318 (0.924 to 1.595)	0.062	1.220 (0.800 to 1.861)	0.356	1.338 (0.971 to 1.844)	0.075
Concerned, distance to shopping opportunities	0.825 (0.590 to 1.153)	0.259	0.987 (0.540 to 1.803)	0.966	0.699 (0.462 to 1.057)	0.089
Concerned, lack of public services	1.157 (0.913 to 1.464)	0.227	1.214 (0.826 to 1.783)	0.323	1.125 (0.829 to 1.526)	0.449
Self rated health	1.513 (1.173 to 1.953)	0.001	1.855 (1.223 to 2.813)	0.004	1.368 (0.982 to 1.904)	0.064
Psychosocial						
Dissatisfied with work	1.444 (1.059 to 1.969)	0.020	1.228 (0.737 to 2.045)	0.430	1.739 (1.164 to 2.598)	0.007
Low score on QOL in general	1.479 (1.139 to 1.921)	0.003	2.170 (1.412 to 3.336)	0.000	1.146 (0.817 to 1.606)	0.431
Health risk behaviour						
Smoker/ex smoker	1.029 (0.833 to 1.271)	0.793	1.232 (0.875 to 1.735)	0.233	0.981 (0.743 to 1.295)	0.891

instance, smoking status (OR = 1.793) and having low perceived opportunities for change (OR = 1.903) appear primarily associated with the SRH of men. Men with low perceived opportunities for change (OR = 2.130) and less than a primary school education (OR = 1.850) tended to report low QOL, although men with a primary education were less likely to report low levels of perceived opportunities for change (OR = 0.447). Stratification showed that this latter effect was present only in men over 45 years of age (data not shown). Dissatisfaction with work was more strongly associated with low perceived opportunities for change among women (OR = 1.739) whereas a low score on QOL was more clearly associated with this variable in men (OR = 2.170).

## DISCUSSION

This is a novel study in that there is comparatively little information in the international literature on the interrelation between measures of health status, wellbeing, and socioeconomic status in more traditional rural based communities in developed industrialised economies.<sup>4 7 18</sup> This is of particular relevance in public policy terms as the directionality of the relation between material disadvantage and social cohesion is both important and difficult to identify.<sup>1 2</sup> An assumption to be tested in relation to urban disadvantage is

that it might be alleviated by policy initiatives that promote community development. Accordingly situations with high levels of social integration coexisting with material disadvantage are of considerable interest.

We have shown in this analysis that there are clear interrelations, as might be expected, between social circumstances and each of the three domains we examine, but satisfaction with work and financial security consistently and independently predict SRH, QOL, and perceived opportunities for change, emerging more strongly than the indicators of neighbourhood networks and support. This would seem to indicate that health research, policy, and interventions in rural areas must be tailored to the particular sociodemographic composition of rural populations and take independent account of their material needs. Our findings do not imply that social capital and cohesion are unimportant. Traditional rural communities enjoy more dense social and family networks than urban communities and the evidence points to a protective effect of this for health.<sup>1 45</sup> However, basic material factors like financial security are directly influential, not just for health and wellbeing but arguably in empowerment terms too, if the proxy we use here, of perceived opportunities for change, can be taken as a reasonable measure of at least one aspect of this concept.

Our findings do show that concerns about social amenities play a part, independently, on perceived health and wellbeing and that there are demographic differences. It is increasingly acknowledged that deprivation indices should take account of geographical access to services, as is the case in the United Kingdom. The Scottish index of multiple deprivation for instance comprises income deprivation,

### Key points

- Health inequalities research in rural settings is not widely reported and indicators of deprivation used in urban studies may be inappropriate.
- Although aspects of community networks and support are influential, measures of material circumstances such as financial security and work satisfaction consistently predict SRH, QOL, and perceived opportunities for change.
- There are clear gender and secular differences in determinants of SRH, QOL, and perceived opportunities for change.

### Policy implications

- Policies directed at rural communities should focus on individual disadvantage and should be targeted to the needs of specific groups.
- Area based strategies should take a concerted approach, ensuring a focus on material disadvantage rather than on social capital strategies alone.

employment deprivation, health deprivation and disability, education, skills and training deprivation, and geographical access to services (<http://www.scotland.gov.uk/library5/social/siod-04.asp>, accessed 29 May 2003). The services included are road distance to a GP surgery or health centre, general store or supermarket, primary school, petrol station, bank or building society, and community internet facilities. Notably car ownership is not included.

This analysis distinguishes between health care and all other public services. People in rural Ireland, as in parts of Scotland, experience poor access to health care, particularly specialised treatments such as coronary artery bypass grafts and angioplasties.<sup>47-48</sup> We find however that it is poor access to general public services such as the police, ambulance or fire services and not specifically health care, that has an impact on these respondents. This may arguably reflect low perceptions of personal risk among rural dwellers for health problems requiring complex interventions. Similar low perceptions of risk have been observed in rural communities for heart disease, sun exposure, and skin cancer.<sup>46-47</sup> Road traffic accidents on the other hand require the rapid response of emergency services, which may imprint acutely on community awareness and therefore be perceived as a more immediate threat to health. A culture of self sufficiency may also help explain this observation and is a potentially positive aspect of rural communities. It has been shown that older Irish people particularly, differentiate clearly between health maintenance strategies and healthcare provision and are sceptical about younger people's dependence on medical services for minor ailments.<sup>49</sup>

The value of studying rural communities in particular depth is highlighted by the fact that GMS or medical card eligibility, in contrast with other studies we have reported<sup>20-22</sup> is not as important a predictor of self rated health, although it is associated with QOL. One suggested explanation is the higher than average rates of eligibility among country-dwellers, compared with urban areas, at 42% of the total sample. It is very possible that eligibility in urban areas is a harder measure of disadvantage than in a rural setting. The means testing entailed in distributing medical cards may not account for softer means of economic support common in rural Ireland such as for instance the seasonal provision of tourist accommodation. It highlights also the importance in studies of poverty and disadvantage of identifying robust measures of economic wealth that include factors other than current income.

There are subtle but important differences according to age, gender, and educational status in this analysis. Untailored personal development interventions may have a lesser impact than would be expected if directed at specific groups and contexts and this should be taken into consideration when rural health research and community interventions are undertaken. Low perception of opportunities for change does not have an impact on the health and quality of life of rural women generally but is influenced by their satisfaction with work situations. Secular influences must also be accounted for. For example, men over 45 years of age with primary education only, appeared to have better opportunities for change than their better educated counterparts, although with lower SRH and QOL. This is almost certainly explained by the fact that this group of men was educated before free secondary school education was introduced in 1967. Before that farmers and agricultural workers of all levels of affluence were likely to leave school earlier than they would today so that education as a measure of relative disadvantage has changed over time. Before the Free Scheme, most rural men did not expect to depart from the traditional occupations of their fathers. Families sought to ensure that their children acquired a class position that did

not fall lower than their own.<sup>50</sup> The introduction of free secondary education in Ireland has had an important impact on the subsequent social development in the country but it also means that educational status might not be as sensitive a measure of disadvantage among older people as it is for younger adults.<sup>21</sup>

There are acknowledged limitations in that the study was primarily designed as an intervention project, although the data we report on here are novel and form part of a secondary analysis programme for the Unit on Health Status and Health Gain. Moreover, the interventions, tailored specifically to farm safety in three communities and to promotion of positive attitudes to mental health issues mainly in one community, could have had little meaningful impact on the variables in question, not least because there were no between community differences at either time point in the factors under analysis here. The sample selection process was at the level of household and therefore not truly random, and it contains more women than men but it represents comparatively high coverage of the small population candidate communities and we were stringent in applying a Bonferroni statistical correction with a high level of statistical significance to avoid spurious associations. In a larger scale survey effects of modest magnitude might have remained independently predictive but notwithstanding this their impact was not as pronounced as the indicators of affluence. We also acknowledge the limitation of our proxy measure for empowerment but find it interesting none the less that it relates so consistently to health, wellbeing, and measures of material affluence. Both SRH and QOL are now well established measures and our findings are broadly in keeping with the literature.

In conclusion, this analysis highlights the importance of material and compositional factors in the health of rural individuals and communities, suggesting that health promotion policy strategies should attend to both context and composition rather than either alone.

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