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Self-rated health among older adults: a cross-national comparison

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Abstract Self-rated health (SRH) may have different implications in various social and cultural settings. However, few studies are available concerning SRH among older persons across countries. The aim of this study was to analyse whether there are cross-national differences in the association between status characteristics, several diseases common among older persons, activities of daily living (ADL), and SRH. The study base was the Comparison of Longitudinal European Studies on Aging (CLESA), which includes data from six population-based studies on aging conducted in Finland, Israel, Italy, The Netherlands, Spain and Sweden. The study population comprised 5,629 persons, with participants from all countries except Italy. Logistic regression analyses were used to assess the relationship between status characteristics, health conditions, ADL and SRH. To examine whether the association among status characteristics, health conditions, ADL and outcome differed across the CLESA countries, interaction

terms defined as “variable*country” were considered separately for each variable. Regression analyses revealed that sex, education, lifetime occupation, heart disease and respiratory disease were differently distributed across countries. Among homogeneous factors, marital status (OR = 1.21), hypertension (OR = 1.41), stroke (OR = 1.67), diabetes (OR = 2.15), cancer (OR = 1.47), musculoskeletal diseases (OR = 2.44), and ADL (OR = 2.72) turned out to be significantly associated with fair or poor SRH. The results indicate that there are differences in self-ratings of health across countries. These differences cannot be explained entirely by status characteristics, self-reported diseases or functional ability. However, an important finding was that in all countries most of the indicators of medical and functional health were homogeneously associated with SRH.

Keywords CLESA project · Self-rated health · Cross-national comparison · Ageing

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Introduction

Self-rated health (SRH) is well established as a strong and independent predictor of mortality (Idler and Benyamini 1997). SRH measurements serve as useful tools for identifying individuals and groups at risk for poor health, and for monitoring health changes in populations. At present, SRH is one of the most widely used indicators of health in survey research and is one of the health indicators recommended both by the WHO and the European Union Commission for health monitoring (de Bruin et al. 1996). However, information on the comparability of SRH across countries, particularly among older persons, is scarce.

SRH presumably presents a summary statement of how the individual perceives various health conditions. SRH represents the individual's perception of multiple facets of health, including medical diagnoses, health

conditions, disease symptoms, impairments, functional losses and disabilities, and psychosocial problems/symptoms (Verbrugge and Jette 1994). Self-ratings of health are influenced as well by emotional status, psychological distress (Rakoski et al. 1993), personality factors, and biographic characteristics (Stoller 1984). Age, race and culture, socio-economic status and gender appear to have been viewed as fundamental social categories, which form the context within which self-assessments of health are constructed and appear in almost every study investigating subjective health (Idler 1992). Yet, as a comprehensive measure of health, SRH was shown to be a significant predictor of health outcomes including measures of mortality and morbidity (Benyamini et al. 2000) in a number of countries with homogeneous populations as well as in countries with multi-ethnic population groups (Idler and Benyamini 1997). The question of whether the relationship between various definitions of objective health (specific chronic conditions and ADL) and personal resources (education, marital status, gender and occupation), and SRH is similar across countries in Europe is important for our understanding of the conceptual structure of SRH and its prediction of future events such as morbidity, use of health services, and death.

Previous studies have shown that there is diversity in SRH, health status, social life, and living conditions between different European countries (Kind et al. 1998; Bobak et al. 2000). The impact of status characteristics on indicators of health, among them SRH, and health care use has been reported throughout the literature (Marmot et al. 1991; Grundy and Sloggett 2003). Health surveys repeatedly show that men die earlier than women, but women tend to have higher rates of morbidity (Verbrugge 1989; MacIntyre et al. 1996). Gender differences in health status have been reported to be inconsistent across age and health measures (Matthews et al. 1999; McDonough and Walters 2001). After adjusting for health indicators, marital status has also been shown to affect SRH, i.e. single persons report poorer health than do married persons (Fylkesnes and Førde 1991; Davies 1995). Several studies have shown that socio-economic status is associated with inequalities in health, i.e. SRH, morbidity and health-related behaviours (Townsend and Davidson 1992; Ferrie et al. 2002). Most of the previous studies have found a positive relationship between high education, status employment and SRH (Idler 1993; Johnson and Wolinsky 1993), although the converse has also been reported (Fylkesnes and Førde 1992). These findings emphasize the importance of considering the impact of status characteristics when comparing differences in SRH across countries.

In several studies, cultural differences have been found in the mean level of SRH (Cockerham et al. 1983). After adjusting for illness indicators, Hispanics were more likely to report fair or poor SRH than were non-Hispanics (Shetterly et al. 1996). After adjusting for age, coronary heart disease, parental lifespan, and

socio-economic and marital status, men in Rotterdam, The Netherlands perceived their SRH better than did men in Kaunas, Lithuania (Appels et al. 1996). In a study using samples from the European Longitudinal Study on Aging, women and men in Florence, Italy were three and four times, respectively, more likely to report good SRH than were men in Tampere, Finland. Several health-related variables were adjusted for in the analyses (Jylhä et al. 1998). In a study using data from the 1992 World Value Survey, the average level of self-perceived health was worse in former communist countries than in Western Europe, for both men and women, when taken diversities in economic and social conditions into account (Carlson 1998). SRH may have different implications in various social and cultural settings (Nilsson and Orth-Gomér 2000; Zimmer et al. 2000). However, few studies are available concerning SRH among older persons (aged 65 years and older) across countries (Su and Ferraro 1997; Jylhä et al. 1998). This study includes older populations in four different European countries and Israel. The European countries represent the cultural and geographic distribution in Europe from the north (Finland and Sweden) via the west (The Netherlands) to the Mediterranean region (Spain). Israel in itself represents a variety of European and Asian cultures. This study offers a rare opportunity to examine whether the relationship between several factors and poor SRH holds across different countries with either homogeneous cultural populations or countries with multicultural populations.

The aim of this study was to analyse whether there are cross-national differences in the association between status characteristics, several diseases common among older persons, activities of daily living (ADL), and SRH.

Methods

Study population and design

The study used data from the Comparison of Longitudinal European Studies on Aging (CLESA), which includes data from six population-based studies on aging conducted in Finland, Israel, Italy, The Netherlands, Spain and Sweden. The total study population is comprised of 11,557 respondents, aged 65–89 years. A detailed description of the methodology of the CLESA project, as well as each study included, is presented elsewhere (Pedersen et al. 1991; Jylhä et al. 1992; Maggi et al. 1994; Béland and Zunzunegui 1995a, 1995b; Beekman et al. 1997; Walter-Ginzburg et al. 2001; Minicuci et al. 2003). Because there was no measure of SRH in the Italian survey, data from this country were not included in the present analyses. Among the other countries, the response rate on the SRH question was 95%, giving a study population of 5,629 persons. The mean age was 76 years. Women comprised 52% of the sample.

Dependent variable

Most countries had in common one global question in which the respondent was asked to make a general statement of his/her health (Table 1). Because the number of categories on this question varied from three to five among the countries, SRH was reclassified into three levels, “excellent, very good or good”, “fair”, and “poor or very poor” for the CLESA project. For the purpose of analyses, these were further classified into two levels, “good” and “fair and poor”, by collapsing the first two and the last two categories respectively (Table 1). Manor et al. (2000) justified the categorization of SRH from a categorical variable into a dichotomous variable.

Independent variables

The status characteristics included were age, sex, marital status, education and lifetime occupation. Marital status was classified as “married” (i.e. married/cohabiting) and “unmarried” (i.e. never married/divorced/widowed). Education was coded into three levels: less than elementary school, elementary school, and more than elementary school (i.e. secondary school and college/university). Lifetime occupation was classified into three categories: non-manual workers, manual workers (i.e. non-skilled manual workers, skilled manual workers, and farmers), and housewives.

Diseases common among older persons and included in the CLESA studies were heart disease, hypertension, diabetes, stroke, cancer, respiratory diseases and musculoskeletal diseases. Respondents with these diseases were classified based upon self-reports.

In all six countries, ADL was assessed by means of a structured face-to-face interview. Because the number, type and response format of the ADL items differed in each study, a procedure was devised to harmonise the data. A four-item scale was constructed out of the ADL items which four of the six countries had in common (bathing, dressing, transferring and toileting). Cronbach’s alpha (CA) of the four-item ADL measure varied from 0.81 in Spain to 0.92 in Finland, and was similar to the CA of scales including five or six items, indicating very good reliability in each country. Finally, the four-item scale was dichotomised into “non-disabled”, i.e. no help was needed, and “disabled” if need of help was indicated in any of the items. A detailed description of the harmonisation process of the ADL items can be found elsewhere (Pluijm et al. 2005).

Statistical analyses

Descriptive analyses by country were obtained by using the SAS system for Windows, release 8.02 (SAS Institute 1999–2001). Differences between proportions were tested by the chi-square test. PROC LOGISTICS in the SAS statistics program was elected for the multivariate approach.

Table 1 Classification scheme of self-rated health categories by country

Country	Question regarding self-rated health	Original coding	CLESA coding	Categories used in the analyses
Finland	How would you evaluate your present health: is it ...?	1 = Very good 2 = Fairly good 3 = Average 4 = Fairly bad 5 = Bad	1, 2 = Excellent, very good and good 3 = Fair 4, 5 = Poor and very poor	1 = Good 2 = Fair and poor
Sweden	How would you rate your general health status?	1 = Good 2 = Reasonable 3 = Bad	1 = Excellent, very good and good 2 = Fair 3 = Poor and very poor	1 = Good 2 = Fair and poor
The Netherlands	How in general is your health?	1 = Excellent 2 = Good 3 = Fair 4 = Sometimes good/bad 5 = Poor	1, 2 = Excellent, very good and good 3 = Fair 4, 5 = Poor and very poor	1 = Good 2 = Fair and poor
Spain	How would you describe your state of health at present?	1 = Very good 2 = Good 3 = Fair 4 = Poor 5 = Very poor	1, 2 = Excellent, very good and good 3 = Fair 4, 5 = Poor and very poor	1 = Good 2 = Fair and poor
Israel	How would you rate your health now?	1 = Excellent 2 = Good 3 = Fair poor 4 = Poor	1, 2 = Excellent, very good and good 3 = Fair 4 = Poor and very poor	1 = Good 2 = Fair and poor

Logistic regression analyses were conducted as follows. In the first set of analyses, the association between status characteristics, health conditions, ADL and SRH were analysed separately for each country (with good SRH as the reference). These analyses were adjusted for age and sex. All variables in the logistic regression analyses, except age, were dichotomised. Age was included as a continuous variable in the analyses. In the second set of analyses, the data from all five countries were pooled together and all variables were included in the model. Country was treated as a set of dummy variables with The Netherlands as the reference country. The Netherlands was chosen based on the following criteria: first, it is the country with the lowest prevalence of fair or poor SRH; second, it has the greatest sample size. To take into account the different design of the studies and to generalize the study sample to the reference population, information on the setting-specific population distribution, stratified by sex and age classes, and on the sampling techniques of the six original studies was collected and a set of country-specific weights were calculated and applied to the raw data (Noale et al. 2005).

To examine whether the association between the independent variables and the outcome measure differed across countries, interaction terms defined as “variable*country” were included in the multivariate models. If an interaction term was significant ($p < 0.05$), the country-specific odds ratios (ORs) and 95% confidence intervals (CIs) for the specific variable were calculated following the method of Figueiras et al. (1998). If an interaction term was not significant, the pooled OR and 95% CI were calculated (Kleinbaum 1994). All explanatory variables were entered as dummy variables.

Results

Descriptive analyses

Characteristics of the study population, in relation to SRH status, are shown in Table 2. The oldest and the youngest age groups are missing in The Netherlands and Israel, due to the original study design, and are therefore not included in the analyses. The older persons in Israel rated fair or poor health to the greatest extent, followed by the older persons in the similar age groups in Spain, Finland, Sweden and The Netherlands. Those in the oldest age groups (75 years and older) rated fair or poor health to a greater extent than those of younger ages in most of the countries. In all countries, except in Finland, a greater proportion of women than of men had fair or poor SRH. Married persons had significantly better health than did unmarried persons in The Netherlands, Spain and Israel. There was more poor health among persons with lower education. In the Swedish sample, there were no respondents with less than elementary school education. In all countries, except in Finland, there was more fair or poor health among housewives.

Manual workers rated significantly fair and poor health to a greater extent than did non-manual workers in Finland, Sweden and Israel. A greater proportion of respondents with heart disease, diabetes, respiratory diseases and musculoskeletal diseases reported fair or poor health. In all countries, except in The Netherlands, those with hypertension reported fair or poor health to a greater extent than did non-hypertensives. Stroke was related to fair or poor health in all countries but the relationships were statistically significant only in Israel and The Netherlands. In all countries, those with cancer rated fair or poor health to a greater extent than those without the disease. The result was statistically significant only in The Netherlands. There was poorer health among disabled persons than among those with no limitation.

Regression analyses

Table 3 shows the odds ratios (ORs) for each of the status characteristics and health factors in relation to fair or poor SRH, within each country, when adjusting for age and sex. Age was significantly related to fair or poor SRH in The Netherlands and in Spain, but not in the other countries. Women had fair or poor SRH in all countries except in Finland. Married persons in Finland and Israel rated better health than did unmarried. In Finland and The Netherlands, those with elementary school or less had fair or poor health compared to those with higher education. Swedish housewives had more fair or poor health. In Finland, Sweden and The Netherlands, being a manual worker was related to fair or poor SRH. Further, in all countries, heart disease, diabetes, respiratory diseases and musculoskeletal diseases were related to fair or poor SRH. Those with hypertension in Sweden, Spain and Israel had fair or poor SRH. In Finland, The Netherlands, Spain and Israel, stroke was associated with fair or poor SRH. Only in The Netherlands did those with cancer have poor or fair SRH. ADL was significantly related to fair or poor SRH in all countries.

The next step in the analyses used multivariable models, including all potential variables (Table 4). The elderly population in Israel rated the poorest health compared to the elderly population in The Netherlands, followed by the elderly populations in Finland and Spain. In Sweden, the proportion of persons with fair or poor SRH was not significantly different from the elderly population in The Netherlands. When the heterogeneity of each potential variable across countries was tested, sex, education level, life occupation, heart disease and respiratory diseases turned out to be non-homogeneous factors of fair or poor SRH. Thus, the country-specific odds ratios were calculated for each of these factors. In all countries, except in Finland, women had poorer health than did men. Those with less than elementary school education had poorer health than those with more than elementary school in Finland and Israel. Those with only elementary school education in Finland

Table 2 Percent of respondents reporting fair/poor self-rated health by age, sex, marital status, education level, lifetime occupation, heart disease, hypertension, stroke, diabetes, cancer, respiratory diseases, musculoskeletal diseases, and ADL (*n* number of respondents)

	Finland		Sweden		The Netherlands		Spain		Israel	
	<i>n</i>	Percentage with fair/poor self-rated health	<i>n</i>	Percentage with fair/poor self-rated health	<i>n</i>	Percentage with fair/poor self-rated health	<i>n</i>	Percentage with fair/poor self-rated health	<i>n</i>	Percentage with fair/poor self-rated health
Total	566	63.4	734	49.7	2,085	40.0	1,105	68.4	1,139	76.4
<i>Age</i>	566		734		2,085		1,105		1,139	
65–74	333	59.5*	479	47.0	962	36.3**	545	66.6	-	-
75–84 ^a	182	70.9	230	54.3	1,123	43.2	433	71.8	801	75.4
85–89	51	62.7	25	60.0	-	-	127	64.6	338	78.7
<i>Sex</i>	566		734		2,085		1,105		1,139	
Women	312	62.5	465	52.3*	1,074	45.1***	546	76.6***	523	84.1***
Men ^a	254	64.6	269	45.3	1,011	34.6	559	60.5	616	69.8
<i>Marital status</i>	566		727		2,085		1,105		1,139	
Unmarried	291	68.0	314	50.6	903	43.4**	428	72.9*	606	81.3***
Married ^a	275	58.5	413	49.6	1,182	37.4	677	65.6	528	70.4
<i>Education level</i>	564		681		2,079		1,100		1,096	
< Elementary	57	71.9***	0	-	244	44.7**	871	71.7*	469	82.1***
Elementary	416	67.8***	633	50.9**	791	45.6***	205	56.1	151	73.5
> Elementary ^a	91	38.5	48	31.2	1,044	34.6	24	50.0	476	71.4
<i>Life occupation</i>	566		496		1,895		1,094		1,118	
Housewives	41	48.8	160	59.4***	235	44.3*	270	78.1***	258	84.5***
Manual	296	71.6***	249	49.4**	1,038	40.3	742	66.0	473	76.7*
Non-manual ^a	229	55.5	87	31.0	622	35.7	82	59.8	387	69.8
<i>Heart disease</i>	566		618		2,085		1,101		1,139	
Yes	202	77.2***	165	73.9***	476	62.8***	258	82.2***	433	84.1***
No ^a	364	55.8	453	37.7	1,609	33.2	843	64.3	706	71.1
<i>Hypertension</i>	566		631		2,029		1,096		1,139	
Yes	125	73.6	170	62.3**	184	38.6	498	75.3***	371	84.1***
No ^a	441	60.4	461	41.2	1,845	39.9	598	62.9	768	72.7
<i>Stroke</i>	466		622		2,085		1,100		1,139	
Yes	26	84.6	18	77.8	154	58.4***	68	75.0	48	91.7*
No ^a	440	63.2	604	45.9	1,931	38.5	1,032	67.8	1,091	75.7
<i>Diabetes</i>	466		631		2,085		1,098		1,139	
Yes	53	81.1*	67	67.2*	205	64.4***	213	80.3***	207	90.8***
No ^a	413	62.2	564	44.9	1,880	37.4	885	65.6	932	73.2
<i>Cancer</i>	466		579		2,084		1,095		1,139	
Yes	26	73.1	22	50.0	225	57.8***	82	70.7	68	80.9
No ^a	440	63.9	557	46.5	1,859	37.8	1,013	68.2	1,071	76.1
<i>Respiratory diseases</i>	537		684		2,085		1,096		1,139	
Yes	55	94.5***	120	67.5**	284	66.5***	361	59.8***	227	91.2***
No ^a	482	62.0	564	44.7	1,801	35.8	735	63.1	912	72.7
<i>Musculoskeletal diseases</i>	542		704		2,085		1,098		1,139	
Yes	240	73.7***	391	67.8***	793	53.1***	766	76.5***	465	87.1***
No ^a	302	58.3	313	26.8	1,292	32.0	332	50.0	674	69.0
<i>ADL</i>	566		723		2,006		1,105		1,135	
Disabled	49	87.9**	84	81.1***	121	62.3***	265	86.6***	223	91.8***
Non-disable ^a	517	61.1	639	44.9	1,885	38.3	840	62.6	912	72.3

^aReference group. *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.001$; the p -value represents the difference in SRH for each potential risk factor within each country

and The Netherlands rated more fair or poor health than those with higher education. Swedish housewives and Finnish manual workers had more fair or poor health than did non-manual workers. Heart disease was related to fair or poor SRH in all countries, but the strengths of the associations differed among the countries. Respiratory diseases were related to fair or poor health in all countries except in Sweden. Age, marital status, hypertension, stroke, diabetes, cancer, musculoskeletal diseases and ADL turned out to be homogeneous factors of

fair or poor SRH. Therefore, the odds ratios in the pooled sample were calculated for these variables. Table 4 shows that age was not independently associated with fair or poor SRH, but all other factors were significantly associated with SRH. It deserves mentioning that supplementary analyses using only respondents in the common age group 75–84 years yielded very similar results. Thus, to gain most possible power in the analyses, data from all age groups were used and presented in the tables.

Table 3 Associations between status characteristics, health status, and fair or poor self-rated health. Analyses are adjusted for age and sex

	Finland		Sweden		The Netherlands		Spain		Israel	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
<i>Age</i>	1.03	1.00–1.06	1.00	0.97–1.04	1.03	1.01–1.05***	1.02	1.00–1.05*	1.01	0.97–1.05
<i>Sex</i>										
Woman	0.85	0.55–1.33	1.65	1.07–2.55*	1.64	1.35–1.99***	2.18	1.70–2.80***	2.39	1.76–3.24***
Men ^a										
<i>Marital status</i>										
Unmarried	1.62	1.09–2.42*	0.90	0.57–1.41	1.07	0.87–1.32	1.04	0.77–1.41	1.45	1.03–2.05*
Married ^a										
<i>Education level</i>										
< Elementary	5.87	2.61–13.20***	-	-	1.38	1.01–1.88*	1.43	0.57–3.58	1.30	0.94–1.80
Elementary	4.34	2.52–7.49***	1.54	0.72–3.27	1.48	1.20–1.81***	0.88	0.34–2.26	1.23	0.71–2.12
> Elementary ^a										
<i>Life occupation</i>										
Housewives	0.82	0.44–1.55	3.65	1.73–7.70***	1.17	0.86–1.60	1.53	0.87–2.68	0.71	0.41–1.24
Manual	2.30	1.55–3.41***	1.93	1.05–3.52*	1.30	1.06–1.61*	1.32	0.82–2.13	1.23	0.86–1.74
Non-manual ^a										
<i>Heart disease</i>										
Yes	2.68	1.78–4.02***	5.09	2.93–8.86***	3.81	2.99–4.84***	2.88	2.02–4.12***	2.44	1.71–3.48***
No ^a										
<i>Hypertension</i>										
Yes	1.41	0.90–2.20	2.15	1.32–3.48**	0.83	0.60–1.15	1.90	1.46–2.47***	2.24	1.59–3.18***
No ^a										
<i>Stroke</i>										
Yes	3.01	1.02–8.91*	3.68	0.82–16.56	2.25	1.50–3.39***	2.20	1.14–4.23*	3.89	1.11–13.74*
No ^a										
<i>Diabetes</i>										
Yes	2.42	1.24–4.72**	2.24	1.02–4.95*	2.69	1.93–3.73***	2.02	1.42–2.86***	6.28	3.33–11.83***
No ^a										
<i>Cancer</i>										
Yes	1.29	0.58–2.87	1.20	0.42–3.42	1.93	1.43–2.59***	1.29	0.79–2.08	0.91	0.43–1.91
No ^a										
<i>Respiratory diseases</i>										
Yes	9.64	3.13–29.78***	2.30	1.25–4.25**	3.65	2.73–4.89***	2.72	2.02–3.66***	4.21	2.45–7.23***
No ^a										
<i>Musculoskeletal diseases</i>										
Yes	2.37	1.61–3.48***	5.06	3.18–8.04***	2.36	1.94–2.87***	3.01	2.27–4.00***	2.69	1.88–3.84***
No ^a										
<i>ADL</i>										
Disabled	5.20	2.00–13.48***	4.64	2.02–10.66***	2.46	1.57–3.87***	4.68	2.93–7.46***	3.80	2.16–6.66***
Non-disabled ^a										

^aReference group. Statistically significant differences between reference group and comparing group(s): *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.001$

Discussion

This study used data from the CLESA study, which is designed to describe the health and functional status of older populations in a variety of different cultures. Such a study presents a singular opportunity to assess the underlying cross-national differences in SRH as well as differences in the aging process within countries. The benefit of this study is that it includes older populations in four different European countries and Israel. Thus, it offers a rare opportunity to examine whether the relationship between several determinants and poor SRH holds across different countries with either homogeneous cultural populations or multicultural populations. The question of whether the relationship between various medical conditions, functional abilities, status characteristics, and SRH is similar across countries in Europe

is important for our understanding of the conceptual structure of SRH and its prediction of future events such as morbidity, use of health services, and death.

The results found here indicated that there are differences in SRH between countries. The elderly population in Israel rated fair or poor health to the greatest extent, followed by the elderly populations in Finland, Spain, Sweden, and The Netherlands. These cross-national differences cannot be explained entirely by status characteristics, self-reported diseases or functional ability. Another important finding was that in all countries most of the indicators of medical and functional health were homogeneously associated with SRH.

Previous studies have found diverging results regarding the relationship between age and SRH, when differences in medical health and functional ability were taken into account (Liang et al. 1991; Johnson and

Table 4 Multivariate analyses for the association between country, status characteristics, health status, and fair or poor self-rated health^a

	Interaction term country*factor	OR (95% CI)	
<i>Country</i>		Country-specific estimates	
Finland			2.08 (1.64–2.64)***
Sweden			0.96 (0.73–1.27)
Spain			1.50 (1.20–1.88)***
Israel			4.86 (3.88–6.10)***
(vs. The Netherlands)			
<i>Age</i> (per 1-year increase)	Homogeneous	Pooled estimate	1.00 (0.99–1.01)
<i>Sex</i>	Non-homogeneous	Country-specific estimates	
Woman (vs. man)		Finland	0.67 (0.42–1.08)
		Sweden	1.70 (1.04–2.78)*
		The Netherlands	1.35 (1.08–1.70)**
		Spain	1.49 (1.10–2.02)**
		Israel	1.55 (1.09–2.22)*
<i>Marital status</i>	Homogeneous	Pooled estimates	
Unmarried (vs. married)			1.21 (1.04–1.40)*
<i>Education level</i>	Non-homogeneous	Country-specific estimates	
< Elementary		Finland	3.83 (1.59–9.25)**
(vs. > elementary)		Sweden	-
		The Netherlands	1.22 (0.87–1.72)
		Spain	1.18 (0.43–3.24)
		Israel	1.47 (1.03–2.08)*
Elementary (vs. > elementary)		Country-specific estimates	
		Finland	3.31 (1.83–5.99)***
		Sweden	1.26 (0.56–2.83)
		The Netherlands	1.28 (1.02–1.60)*
		Spain	0.85 (0.30–2.39)
		Israel	1.33 (0.74–2.37)
<i>Life occupation</i>	Non-homogeneous	Country-specific estimates	
Housewives (vs. non-manual)		Finland	0.58 (0.29–1.14)
		Sweden	2.62 (1.27–5.42)**
		The Netherlands	1.05 (0.75–1.48)
		Spain	1.53 (0.86–2.75)
		Israel	1.02 (0.64–1.62)
Manual (vs. non-manual)		Finland	1.81 (1.17–2.78)**
		Sweden	1.43 (0.74–2.76)
		The Netherlands	1.05 (0.75–1.48)
		Spain	1.53 (0.86–2.75)
		Israel	1.28 (0.87–1.89)
<i>Heart disease</i>	Non-homogeneous	Country-specific estimates	
Yes (vs. no)		Finland	2.62 (1.71–4.02)***
		Sweden	3.51 (1.97–6.25)***
		The Netherlands	3.82 (2.97–4.91)***
		Spain	2.09 (1.43–3.07)***
		Israel	1.79 (1.23–2.61)**
<i>Hypertension</i>	Homogeneous	Pooled estimates	
Yes (vs. no)			1.41 (1.20–1.67)***
<i>Stroke</i>	Homogeneous	Pooled estimates	
Yes (vs. no)			1.67 (1.18–2.36)**
<i>Diabetes</i>	Homogeneous	Pooled estimate	
Yes (vs. no)			2.15 (1.73–2.67)***
<i>Cancer</i>	Homogeneous	Pooled estimate	
Yes (vs. no)			1.47 (1.15–1.89)**
<i>Respiratory diseases</i>	Non-homogeneous	Country-specific estimates	
Yes (vs. no)		Finland	9.12 (2.87–28.92)***
		Sweden	1.89 (0.97–3.68)
		The Netherlands	3.55 (2.60–4.84)***
		Spain	2.08 (1.51–2.84)***
		Israel	2.80 (1.60–4.90)***
<i>Musculoskeletal diseases</i>	Homogeneous	Pooled estimate	
Yes (vs. no)			2.44 (2.12–2.81)***
<i>ADL</i>	Homogeneous	Pooled estimate	
Yes (vs. non-disabled)			2.72 (2.09–3.55)***

^aStatistically significant differences between reference group and comparing group(s): *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.001$

Wolinsky 1993). The diverging results indicate that the relationship between age and SRH may not be linear. A curvilinear relationship between age and SRH has been suggested, indicating that those in the youngest and the oldest age groups rate the highest SRH, whereas the “middle-aged”, i.e. people in the age group 45–75, have the worst SRH, after adjusting for medical conditions and functional ability (Moum 1992; Idler 1993). In studies of people 60 years and older, some studies have shown higher SRH among the oldest whereas other studies showed no differences between the ages (Johnson et al. 1991; Johnson and Wolinsky 1993). In our study, the associations between age and SRH found within some countries did not remain when all the other variables were added to the models, which is in line with the findings in the latter studies.

When it comes to gender and SRH, gender differences are inconsistent across age and health measures (Su and Ferraro 1997; Matthews et al. 1999). A review of work on SRH and gender concluded that about 75% of the studies showed no or weak relationship between gender and SRH, when education, race, employment and social network were adjusted for. In several age groups, women rate their health as poorer than men do, but this does not seem to apply to people of 65 and older (Bjørner et al. 1996). These results imply that if there is an effect of gender on SRH, it is small, which is in accordance with the findings here. Although the associations were weak, women had poorer SRH than did men in Sweden, The Netherlands, Spain and Israel.

Marital status was a homogeneous factor weakly associated with fair or poor SRH. Education level and lifetime occupation turned out to be non-homogeneous factors of fair or poor SRH. Those with less than elementary school education had poorer health than those with more than elementary school in Finland and Israel. Those with only elementary school education in Finland and The Netherlands rated more fair or poor health than those with higher education. Occupation was not independently associated with fair or poor SRH in the multivariate analyses, with a few exceptions. Prior studies have found a positive impact of higher education level and status employment on SRH. The associations, however, were weak when controlling for illness indicators and other socio-economic variables (Johnson et al. 1991; Moum 1992; Fylkenes and Førde 1992), which is consistent with the results found here.

Heart disease was related to fair or poor SRH in all countries, but the strength of the associations differed among the countries. Respiratory diseases were associated with poorer health in all countries except in Sweden. Hypertension, stroke, diabetes, cancer and musculoskeletal diseases turned out to be homogeneous factors of fair or poor SRH. Most of the findings here are in agreement with previous studies, which have shown a strong association between medical health and functional ability (Jylhä et al. 1986; Johnson and Wolinsky 1993; Ferraro et al. 1997). In line with other

studies adjusting for diseases common among older persons (Kriegsman et al. 1996; Nybo et al. 2001), ADL-disability was associated with fair or poor SRH in all countries. It would have been of interest to evaluate whether the severity of the diseases differed across the countries, but this was not possible. Despite this, our results suggest that SRH is a useful global measure which correlates with several indicators of medical and functional health in these European countries.

A number of explanations may account for the differences in SRH across countries found here. One explanation may be found in the extent to which the health variables cover the range and severity of different health conditions in different countries. Another explanation may be differences in cultural factors (such as ways of life), in history, and in social structures across countries. There may also be differences in how people from different cultures evaluate their health, i.e. how they take different health issues into their global evaluations (Idler and Benyamini 1997; Jylhä et al. 1998). Important issues have been raised about cross-cultural differences which would be inaccessible to most respondents. Angel and Guarnaccia (1989) conclude from their study that “for Mexican Americans and Puerto Ricans the adjectives associated with normal health differ from those used by non-Hispanics”. A similar case of cross-cultural differences in a single study occurs in the work of Appels et al. (1996) in which the normative category for Lithuanians is “poor” whereas it is “good” for the Dutch. Another explanation for the differences in SRH across countries may be that slightly different measurements of SRH were used, both in terms of the wording of the question and in terms of response alternatives. Although the wording of the question differed, a global question in which the respondent was asked to make a general statement of his/her health was used in all countries. It was agreed by the investigators from each country that all items refer to an overall present assessment of health. Furthermore, the measures of SRH was harmonised to ensure optimal comparability. As the CLESA project makes use of already existing studies, this harmonisation effort is limited to post-harmonisation. Therefore, caution is still needed in interpreting the findings in terms of genuine cross-national differences. Furthermore, international comparisons of rates of specific categories of SRH are problematic because of cultural and linguistics differences; emphasis may be directed towards comparing the determinants of SRH.

The differences in health-ratings among the countries may also be explained by other factors and intermediate variables not included in this study. Although status characteristics and morbidity were adjusted for in the analyses, there may be social and economic inequalities (such as personal and household income, retirement age and funding, housing situation, members in the household, voluntary associations, and family and friends, which in turn may lead to health inequalities) between the countries not captured in this study (van Doorslaer

et al. 1997; Carlson 1998; Kopp 2000; Kunst et al. 2005) which may explain the findings. Moreover, it is noteworthy that, despite harmonisation and common categories, there are still a few points which need to be kept in mind with the variables concerning status characteristics. In several of these variables, the distributions vary greatly between countries and these differences reflect both cultural and, in some cases, sample-related differences (Minicuci et al. 2003). There is also a wide range of other factors in the individual's life situation which affects how one rates one's own health. These factors may be different between individuals, between groups in a society, and between countries. Among them, psychosocial problems/symptoms, emotional status, psychological distress, personality and lifestyle would have been of interest to further evaluate. However, such analyses were not possible to do in an effective way using data from the CLESA study.

A limitation with this study is that the method used for selection of the CLESA samples and sampling strategies differed across countries. Some of the samples are geographically defined whereas others are national samples. Therefore, the various country samples cannot be considered to be representative for the total elderly population from which the sample was drawn. This should be borne in mind when interpreting the results.

Conclusions

There are differences in SRH between countries. These differences cannot be entirely explained by cross-national differences in status characteristics, health condition or functional ability. In this study, we did not find strong associations between status characteristics and SRH in the countries. However, within each country, SRH was associated with several indicators of medical and functional health.

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