

A comparative analysis of health status in the FELICIE countries

*Gabriele Doblhammer, Uta Ziegler, Pekka Martikainen,
Elina Nihtilä, Wenke Apt*

Whether a person is in need of care depends foremost on the health status; whether care is provided in institutions or at home is determined by family status, living arrangement and socioeconomic background. The choice of a specific living arrangement is a step-wise decision where the marital/conjugal status, the existence of family support, the health conditions and socio-economic conditions are the most important determinants. Old people can live on their own if they are in good shape or if they reside with someone else who takes care of them.

Projections of care need, thus, primarily depend on assumptions about future trends in health status while projections of care supply have to consider the support future elderly may expect from their partner and from their children. This paper addresses the question of disability in the nine Felicie countries with a particular emphasis on Germany.

A long and extensive literature has shown associations between marital status and indicators of health with the married having the best health, followed by the never-married and then the formerly married. This association is hypothesised to reflect both positive health selection (unhealthy people are less likely to marry, stay married or remarry) and the protective effects of companionship, care when ill, sexual intimacy, material advantages (especially for women), domestic services and control of unhealthy behaviours (especially for men) (Hahn 1993; Glaser, Murphy and Grundy 1997). It has been suggested that this association may weaken or even be reversed, in older women. Goldman, Korenmen and Weinstein (1995) found that never-married older women had better health outcomes than their married counterparts, a result the authors attributed to more extensive social ties built up as an alternative to marriage. However, this analysis was based on a private household sample (the US Longitudinal Study of Aging). Analyses of British data including the institutional population have shown a continuing, although weaker, advantage for the married, even in the oldest age groups (Glaser, Murphy and Grundy 1997).

Within the FELICIE project health profiles of nine European countries are compared. Special emphasis is put on marital status specific differences in health in each of the countries. International comparisons, however, are clearly hampered by different definitions of health. A recent publication of the Eurostat (2003) gives an overview of the health questions asked in European health surveys and assesses their comparability. According to the report questions about self-perceived health belong to those indicators with relatively high levels of comparisons which are commonly asked in national health interviews. Therefore, we decided to base our study on a measure of subjective health that is closely linked to disability: the ability to independently perform activities of daily life.

Even if similar questions are asked in national surveys there are some variations among the countries, not only in the wording but most importantly there are differences in the response categories. Within the FELICIE project we, therefore,

opted for using an international survey – the European Community Household Panel (ECHP) as the starting point for our comparative analysis. The ECHP contains the question “Are you hampered in daily activities by any physical or mental health problem, illness or disability” with the answer categories severely, to some extent, and no. Although the ECHP solves to a certain degree the problem of comparability by asking a uniform question in all countries there are additional challenges. First, the same health questions may be answered differently in different countries depending on the exact wording and cultural differences in the perception of health. Second, the ECHP is restricted to private households only. It therefore excludes the large proportion of elderly living in institutions. Furthermore, living in institutions is related to health and marital status. On the basis of the ECHP alone one, therefore, would underestimate the prevalence of disability. Furthermore, this underestimation would be more serious for the unmarried than for the married: since the unmarried usually do not have a partner who is taking care of them in case of sickness, they have a higher likelihood of living in an institution. Third, sample sizes in the ECHP are generally small, particularly at older ages. It is therefore impossible to derive age specific prevalences of health for the unmarried population, particularly when one wants to distinguish between the single, widowed and divorced.

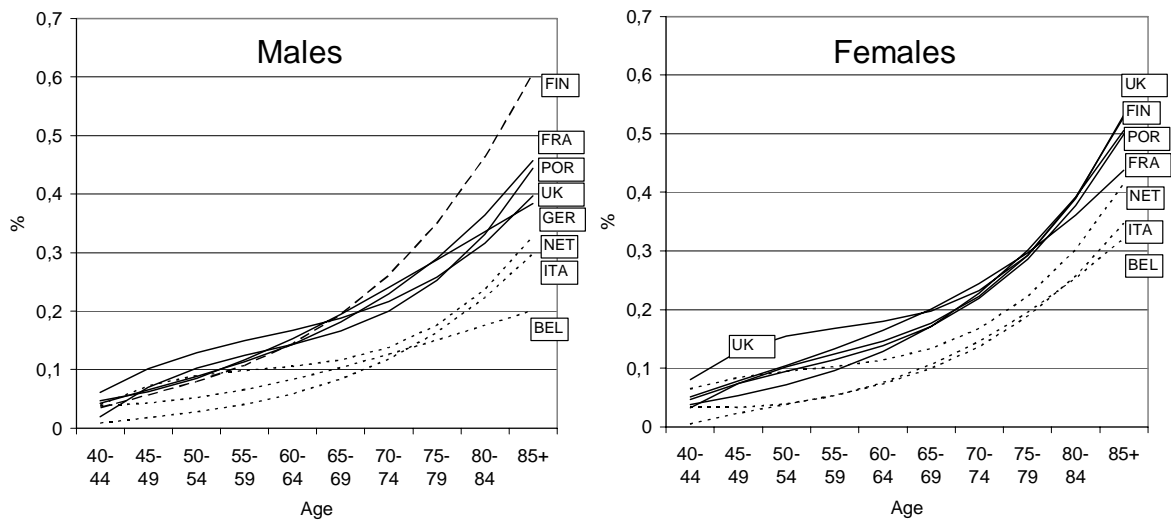
Within the FELICIE project we therefore resolve to the following procedure consisting of three steps: on the basis of the ECHP we first analyze the question about limitations in daily activities “Are you hampered in daily activities by any physical or mental health problem, illness or disability” (severely, to some extent, no) and assume that those are in need of care who answered that they suffered from severe limitations. The decision to restrict those who are in need of care to the category “severely” was taken after extensive cross-country comparisons. These comparisons show that defining care need in terms of the two categories “severely” and “to some extent” would result in large differences between countries that may mainly reflect differences in the cultural perception of moderate disability. Between-country-differences are much smaller and more reasonable when only severe disability is used.

Since the sample sizes in the ECHP are generally small, particularly at older ages, we do not get reliable age-specific prevalences of disability for the unmarried population. We therefore restrict our analysis to the married population only and calculate age-specific profiles of disability for the married. Using the proportion of married people living in institutions from national statistics, we then adjust the age-profile in order to reflect the prevalences in the total married population rather than in the married population living in private households. In a third step we use national health surveys to estimate odds ratios of disability for the widowed, single and divorced as compared to the married and apply these odds ratios to the age-specific prevalences of the married. We use logistic regression to calculate the age-specific and marital status specific prevalences of disability.

The international comparison of the prevalence of disability among the married in the eight FELICIE countries Belgium, France, Finland, Germany, Italy, Netherlands, Portugal, United Kingdom (in the ECHP no data are available for the Czech republic) divides the countries in two broad groups: The first group is outstanding insofar that the countries exhibit particular low prevalences for both sexes and consists of Italy, Belgium and the Netherlands (dashed lines in Figure 1). The remaining countries form a more or less consistent group with prevalences at age 85+ ranging for males from 38 percent in Germany to 46 percent in France, and for females from 44 percent in Portugal to 53 percent in France and UK, respectively.

Finnish males are outstanding because of their extremely high prevalence of severe disability from age 70 onwards, which reach a level of 60 percent at age 85+.

Figure 1: Prevalence of severe disability among married people in eight FELICIE countries



A comparison of the level of disability among the married at age 85 with remaining life expectancy at age 75 shows no correlation when corrected for sex. It is, thus, not possible to infer whether increased life expectancy is a result of years spent in disability or in good health. On the contrary, it seems that the two are independent.

The question arises why? Although we can only speculate one possible explanation is the influence of social factors in the process from functioning loss to disability. There is a long way from the healthy state to disease and impairment which may lead to functioning loss that may finally result in disability. Whether functioning loss, which mainly captures physical decline, leads to disability depends largely on the social environment. The question asked in the ECHP contains both aspects physical decline and disability. Differences in the prevalence of severe disability may therefore not only capture differences in physical health but also in the social environment that prevents people from or determines them to become disabled when they experience functional decline. What are these social factors? On the one hand there may be differences in the medical system on the other hand differences in family structures, economic status and cultural norms. An Italian who is taken care of by the family, which may provide financial resources and accepts functional loss as an obligation to personally take care of the elderly may feel less hampered and disabled than a Fin who lives alone in an institution with little financial resources remaining.

Turning to marital-status specific odds ratios of severe disability we generally find that the married experience the best health status (Table 1). As mentioned before, this is consistent with a large body of literature. As expected, there exist considerable

differences between marital status specific odds ratios on the basis of the ECHP and the national sources. This partly stems from different definitions of disability and from the inclusion of the institutional population in some of the national surveys. In France a particular strict definition of disability is used in the national survey, which results in not only extremely low levels of disability but also in marital-status specific odd ratios that are lowest for the widowed and divorced. With the exception of France the widowed generally seem to fare best after the married while the never-married are the most disadvantaged in terms of disability. Differentials are similar among females and males. Comparing the odds ratios derived from national sources with those based on the ECHP (not shown) we find that the ECHP generally underestimates the differentials (with the exception of France). This may be explained by the exclusion of the institutionalized population from the ECHP. Since institutionalization depends both on health status and marital status selection effects into institutions are stronger among the unmarried than the married.

Table 1: Marital-status specific odds ratios in disability in comparison to the married, ages 45+ based on national sources

	Males			Females		
	Never married	Widowed	Divorced	Never married	Widowed	Divorced
Belgium	1.71 **	1.04	1.47 **	1.32 **	1.02	1.47 **
Finland						
France	2.38 **	0.66 *	0.56 *	1.70 **	1.17 *	1.03
Germany	1.21 **	0.99	1.44 **	1.34 **	1.37 **	1.73 **
Italy	2.42 **	1.53 **	1.53	3.33 **	1.40 *	1.05
Netherlands	1.43	0.84	1.39	1.35	1.00	1.69 **
Portugal	3.67 **	1.17 **	1.52 **	2.61 **	1.26 **	1.43 **
UK	1.32 *	1.03	1.36 **	1.13	1.27 **	1.48 **

** : significant at the 1% level, * : significant at the 5% level

No correlation exists between country patterns in marital status-specific odds ratios in disability and differences in remaining life expectancy at age 45 by marital status (Figure 2). For example, the country with the largest odds-ratios in disability is Italy, while the differences in life expectancy are largest in Germany. This points again to the explanation that country-specific social factors influence the relationship between functioning loss and disability.

Trends in healthy life expectancy in Germany between 1992 and 2001

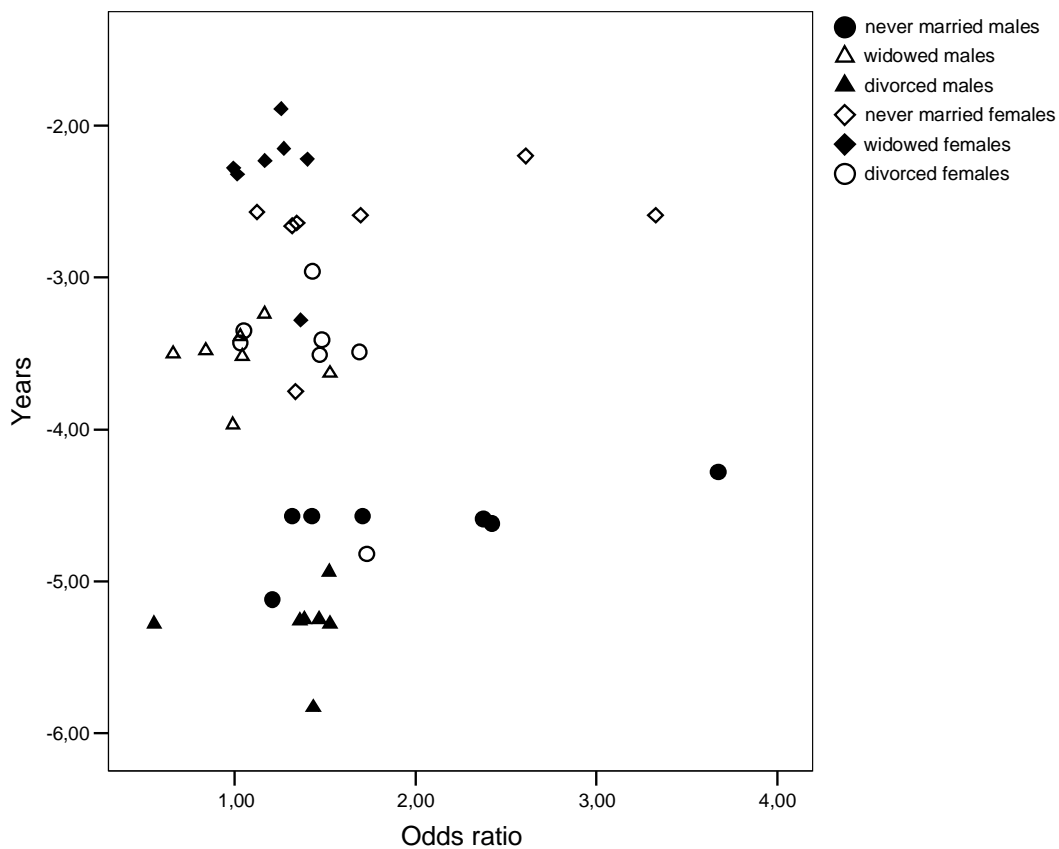
Three scenarios have been proposed concerning the future developments of mortality and health. The first scenario assumes that the increase in life expectancy is caused by a reduction in the fatality rate of chronic diseases rather than by a decline in the incidence of the disease (Gruenberg, 1977; Olshansky et al. 1991). This scenario is generally called the “expansion of morbidity” theory. The increase in life expectancy goes hand in hand with an increase of years spent in poor health.

In contrast, Fries (1989) proposed the “compression of morbidity” scenario, which assumes that the onset of morbidity will be postponed while average lifespan

will not exceed 85 years. This implies that morbidity will be compressed into an ever-shorter period at the end of life.

The third theory was proposed by Manton (1982) and combines both the compression and expansion scenario. The “dynamic equilibrium” scenario implies that the increase in life expectancy will be associated with a redistribution of disease and disability from severe to moderate states. Life expectancy with severe disability will therefore decrease while life expectancy with moderate disability will increase.

Figure 2: Scatterplot marital status specific odds ratios in disability and differences in remaining life expectancy as compared to the married; ages 45+ FELICIE countries



Health trends have been widely analysed on the basis of health expectancies, which combine information about mortality and health trends at the population level (Crimmins, Saito and Ingegneri 1989, 1997, Bebbington 1991, van Ginneken et al. 1991, van de Water, Boshuizen and Perenboom 1996, Valkonen, Sihvonen and Lahelma 1997, Robine, Mathers and Brouard 1996, Doblhammer and Kytir 2001, Robine, Romieu and Cambois 1997, Robine et al. 2003). The results of these studies, however, tend to depend on the indicator of health that is used in the study and on the time period. For example, Crimmins, Saito and Ingegneri (1989) use disability as an indicator for health in the US in the 1970s and conclude that increases in life expectancy lead to an expansion of morbidity. For the 1980s Crimmins, Saito and Ingegneri (1997), however, come to the opposite conclusion and support the scenario of a compression of morbidity, particularly at older ages. Grundy, Ahlburg and Ali (1999) report that the prevalence of disability was much higher in the 1996/97 UK

disability survey than in the earlier 1985 survey and that this results is therefore not in concordance with those from the United States. Contradictory results exist for Finland (Robine et al. 2003) with an increase in the proportion of people that report long-standing illnesses over the time period 1964 to 1996, a decrease in the proportion of people with ADL disabilities (1986 to 1994) and a decrease of the proportion of people reporting poor or rather poor health (1979-1998). Studies based on self-reported health tend to find a compression of morbidity, particularly among middle-aged men (van de Water, Boshuizen and Perenboom 1996) but also among the elderly (Doblhammer and Kytir 2001).

Despite all these discrepancies in the results Robine et al. (2003) in their overview of health trends in low-mortality countries over a 25-year period from 1970 to 1995 support the dynamic equilibrium scenario. The authors conclude that “disability-free life expectancy has evolved very differently depending on the severity level of disability: a decrease for the most severe levels of disability (institutionalisation and/or bed confinement), and an increase for the less severe levels of disability (no Activity of Daily Living (ADL) Dependency)”. The general conclusion from the overview of past studies is that “at worst the increase in life expectancy is accompanied by a pandemic of light and moderate but not of severe disability”. Countries, however, appear to differ largely in their trends of disability, particularly for less severe levels of disability. The more severe the levels, the more similar are the changes (Robine et al. 2003).

The time period covered in the ECHP ranges from 1995 to 1999 and is too short for analyzing time trends. Since for Germany the ECHP is based on the German Socioeconomic Panel (GSOEP), we use the cross-sections of the GSOEP for the years 1992 and 2001 to study trends in the prevalence of disability in East and West Germany by applying the Sullivan Method (Sullivan, 1971) to the German life tables for the years 1992 and 1999 from the Human Mortality Database (Table 2).

In terms of care need health trends at ages 75+ are of particular interest. Over the time period life expectancy has been increasing in both parts of Germany with a particular strong increase (1.4 years) among females aged 75+ in East Germany. In this age group the health ratio of moderate and severe disability combined (= number of years with moderate and severe disability divided by the total number of years) remains largely stable among females (East Germany 1992: 86 percent; 2001:84.7 percent; West Germany 1992: 81.8 percent; 2001:80.5 percent) improves among East German males (1992:89.1 percent; 2001:76.3 percent) and deteriorates among West German males (1992: 73.5 percent; 2001:81.3 percent). In other words, among German females we neither find a compression nor an expansion of disability but rather a parallel shift of mortality and disability to higher ages. This is different for males: in East Germany there is a compression of disability (increasing life expectancy goes hand in hand with better health), in West Germany an expansion of disability.

Behind these general trends lie opposite trends in moderate and severe disability. With the exception of West German males there is a tendency from severe to moderate disability. While among females the health ratio of severe and moderate disability combined remains stable over time the health ratio of severe disability clearly declines,

Table 2: Trends in healthy life expectancy in East Germany between 1992 and 2001, GSOEP

Disability	Males				Females			
	Disability in %		Partial life expectancy		Disability in %		Partial life expectancy	
	1992	2001	1992	2001	1992	2001	1992	2001
EAST GERMANY								
Age 40-59								
No	61.0	59.6	11.67	11.28	51.5	54.3	10.01	10.62
Moderate	30.8	31.0	5.63	6.04	38.8	34.8	7.63	6.90
Severe	8.1	9.4	1.47	1.76	9.7	10.9	1.84	2.09
<i>health ratio moderate & severe</i>			37.8	40.9			48.6	45.9
<i>health ratio severe</i>			7.8	9.2			9.4	10.6
Age 60-74								
No	32.0	40.8	3.71	4.90	33.0	35.0	4.51	4.79
Moderate	47.2	42.9	5.79	5.68	47.1	48.5	6.39	6.72
Severe	20.7	16.4	2.66	2.18	19.9	16.5	2.58	2.39
<i>health ratio moderate & severe</i>			69.5	61.6*			66.6	65.5
<i>health ratio severe</i>			21.9	17.1			19.1	17.2
Age 75+								
No	9.7	19.7	0.86	2.13	13.8	16.6	1.38	1.72
Moderate	46.5	51.8	3.84	4.17	43.9	50.8	4.28	5.79
Severe	41.0	28.5	3.17	2.71	40.3	32.5	4.20	3.73
<i>health ratio moderate & severe</i>			89.1	76.3*			86.0	84.7
<i>health ratio severe</i>			40.3	30.1			42.6	33.2
WEST GERMANY								
Age 40-59								
No	60.3	64.6	11.57	12.48	53.3	63.1	10.42	12.64
Moderate	29.3	25.3**	5.65	4.83**	35.3	28.1	6.88	5.23***
Severe	10.4	10.1	1.95	1.95	11.4	8.8**	2.26	1.72**
<i>health ratio moderate & severe</i>			39.7	35.2**			46.7	35.5***
<i>health ratio severe</i>			10.2	10.1			11.6	8.8**
Age 60-74								
No	31.4	40.6**	3.90	5.25	29.2	42.0	3.96	5.89
Moderate	42.0	43.3	5.31	5.67	46.3	42.9	6.40	5.81*
Severe	26.6	16.2**	3.45	2.07***	24.6	15.1**	3.47	2.29***
<i>health ratio moderate & severe</i>			69.2	59.6***			71.4	57.9***
<i>health ratio severe</i>			27.2	15.9***			25.1	16.3***
Age 75+								
No	26.2	19.7	2.31	1.77	18.5	18.5	2.00	2.28
Moderate	44.0	45.9	3.88	4.32	36.0	44.7	3.80	4.55
Severe	29.4	34.1	2.54	3.38	44.1	36.8	5.22	4.84
<i>health ratio moderate & severe</i>			73.5	81.3			81.8	80.5
<i>health ratio severe</i>			29.1	35.7			47.3	41.5

***: significant at the 1% level; **:significant at the 5% level; *:significant at the 10% level

Among females the parallel shift in disability and mortality to higher ages combined with the trend from severe to moderate disability is consistent with the “Dynamic equilibrium hypothesis” formulated by Manton.

e.g. among East German females from 42.6 percent in the year 1991 to 33.2 percent in 2001. Among East German males decline both severe and moderate disability. West German males are outstanding not only because of their deterioration of the health ratio over time but also because of their exceptionally low health ratios. Whether the

latter result reflects reality or is due to a data artefact in the GSOEP has still to be investigated.