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Comparative analysis of health expectancy indicators in older adult men and women in selected European countries

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Abstract. The study concerns the assessment of the health of older adults in selected European countries using summary measures of population health. These measures show to what extent increasing life span goes hand in hand with a healthier life, and to what extent it is burdened by health limitations and disability. This paper covers such health domains as self-perceived health, functional limitations, chronic morbidity and disability. Data on the health of people aged 60 and over came from Wave 7 of SHARE, and Sullivan's method was used to calculate health expectancy measures. The multivariate nature of the health status measurement prompted us to also use a multivariate comparative analysis and to determine a synthetic measure of health status. The results showed large disproportions in health expectancy indicators in the later years of life of men and women in the European countries analysed, and these differences are greater than those relating to life expectancy.

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Contents:

1. Introduction

The last few decades have been characterised by a continuous decline in mortality and an increase in chance of surviving to an increasingly later age. Not only has life expectancy at birth increased, but so too have life expectancies at 60 and older. Age-at-death and cause-of-death patterns have changed significantly. Since the 1970s, there has been an increase in the proportion of chronic and non-communicable diseases as the dominant causes of death, and a shift in mortality to older ages. This is in line with the theory of epidemiological transition, according to which, in phase four, the main beneficiaries of the extension of life expectancy are older adults (Olshansky & Ault, 1988). These changes are also followed by shifts in the occurrence of functional limitations and disabilities to older adults and a change in disability patterns, as described by Myers and co-authors (2003). Mortality measures and life table parameters with only two states – alive and dead – are no longer sufficient to monitor the health status of the population. There has been a shift in focus of research interests from life expectancy to expectancy of life that is sufficiently healthy to remain physically and socially active – i.e. healthy life expectancy. The importance of the health status of older adults has also been revealed by the COVID-19 pandemic, whose dramatic effects – risk of death – increased not only with age, but also with the occurrence of co-morbidities.

Since the mid-1990s, considerable research effort has been made to construct new measures of population health that combine information on mortality and non-fatal health outcomes. These measures are called "summary measures of population health" and are divided into two groups: health gaps and health expectancies (Murray et al., 2002; Wróblewska, 2008). Health gaps are used to estimate population health losses by quantifying the difference between current health status and established norms or targets for population health. An example of a measure of lack of health is the disability-adjusted life year, which is used for measurement in research into burden of disease and injury (e.g. Kyu et al. 2018). Measures of health expectancies are a combination of life expectancy and years lived in less-than-full health states, and determine the average number of years that a person of a certain age is expected to live a healthy life provided that current mortality and health status trends continue. Health expectancy is a generic term covering various measures, which are theoretically as numerous as health concepts are. This paper looks at a summary of measures of population health from the health expectancies group, whose estimates shed light on whether longer life goes hand in hand with a healthier life, or whether the extra years of life are years of ill health and disability. Such knowledge is very important and continues to be relevant both for monitoring population health trends and inequalities, and for regional and European health policies, as the poor health status of the expanding population of older adults creates new challenges for the care system and places additional burdens on the healthcare system.

2. Research objective and study object

The objective of this paper is to provide a broader assessment of the health of older people in 12 European countries using measures of health expectancies covering various health domains. Based on data from the Survey of Health, Aging and Retirement in Europe (SHARE) carried out in 2017 (Börsch-Supan, 2020) and data on mortality obtained from the Human Mortality Database (HMD, 2021), five health expectancy indicators were estimated: (1) life expectancy in good self-perceived health, (2) life expectancy without chronic morbidity or with one chronic morbidity, (3) life expectancy without global activity limitation, (4) life expectancy without ADL limitation, and (5) life expectancy without IADL limitation. We examine people aged 60 – the age at which morbidity and functional limitations begin to rapidly increase. The health expectancy indicators in our analysis cover various domains of older-adult health and better capture its multidimensionality, and collectively largely cover many aspects of worsening health status and the disablement process (Verbrugge & Jette, 1994; Cambois et al., 2008).

(1) – Life expectancy in good self-perceived health (*LE in good health*) is a health expectancy based on a subjective health indicator known as self-perceived

health (SPH). SPH is a widely used indicator in social research, and its results are associated with many aspects of quality of life and health states, such as physical function and the incidence of disease and disability. At the same time, it may include other aspects of health not captured by other health indicators – in particular, non-diagnosed sickness and depressive states (Martikainen et al., 1999; Van Oyen et al., 2008; Hardy et al., 2014). Poor self-perceived health is also a good predictor of mortality and hospitalisation (DeSalvo et al., 2006). Self-assessed health on the population level is a simple single-item question: "Would you say your health is excellent, very good, good, fair, or poor?" Our research uses results aggregated to the categories "at least good" (i.e. excellent, very good and good) and less than good" (i.e. fair and poor). (2) – One of the common aspects of worsening health status is the emergence of chronic morbidities. Especially in the case of older adults, their occurrence is conducive to the appearance or intensification of functional limitations and is strongly associated with disability (Guccione et al., 1994; Fong, 2019). Our study estimated life expectancy without chronic morbidity or with one chronic morbidity (*LE without chronic morbidity or with one*). The information on the occurrence of chronic morbidities in the SHARE study relates to doctor-diagnosed diseases and included a broad number of somatic diseases and chronic morbidities, and a category of "other diseases". The chronic morbidities in the checklist included over twenty different diseases and chronic conditions, including cardiovascular and metabolic diseases, degenerative diseases and fractures, affective disorders and nervous system diseases, and neoplastic diseases. The list of conditions did not include all conditions, such as injuries and dementia. (3) – Life expectancy without global activity limitation (*LE without global activity limitation*) is also known as Healthy Life Years (*HLY*) and one of the basic set of the structural indicators that the European Union uses to monitor progress in strategic EU policies, including in the area of retirement age (Bogaert et al., 2018). The *HLY* is designed based on the global activity limitation index (GALI), which determines the incidence of limitations – in performing actions and undertaking various common activities – due to health problems. GALI is a good predictor of future health outcomes in terms of both mortality and healthcare expenditure, and it and self-assessment of health status are complementary to one other (Van Oyen et al., 2018). The GALI is self-reported and refers to the question: "For the past six months at least, to what extent have you been limited because of a health problem in activities people usually do?" There are three possible responses: not limited, moderately limited, or severely limited. In the *HLY* estimate we defined respondents as being in a healthy state if they reported being "not limited". (4) – Life expectancy without ADL limitation (*LE without ADL limitation*) and (5) – Life expectancy without IADL limitation (*LE without IADL limitation*) are basic indicators of years of life without disability and are constructed on the basis of measures of activities of daily living (ADL) and instrumental activities of daily living (IADL). The activities included in these indicators are those considered essential for independent living. The ADL module, as originally proposed by Katz and co-authors (1963), assesses the occurrence of difficulties in carrying out daily activities such as dressing, walking, independent bathing, eating, getting out of bed and using the toilet. The activities comprising the ADL indicator represent the capacity for self-care. The activities comprising the IADL index, as proposed by Lawton and Brody (1969), relate to daily life, and the skills they require are not only physical but also cognitive. These are: preparing a hot meal, making purchases, leaving the home and using public transport, making phone calls, taking medicines, managing money, doing laundry and being able to do housework or gardening. The IADL indicator makes it possible to assess the capacity for basic functioning in the real world, and to objectify the need for help and instrumental support.

3. Data and statistical methods

First, the prevalence of ill-health measures for population aged 60 years and over was compared by country, stratified by sex. Prevalence rates were adjusted for age to the European standard population. Data on the occurrence of individual morbidities stratified by sex and in five-year age intervals (from 60–64 years to 85 years and over) were obtained from SHARE's Wave 7. SHARE is

a multidisciplinary international panel study of micro data on health and various aspects of the lives of older Europeans. The SHARE study provides the knowledge needed for European and national goals to support policies for older adults in Europe. Methodological details of the data collection procedures have previously been described and can be found in Börsch-Supan et al. (2013). The analyses were conducted for 12 European countries (Fig. 1) for which there was a large sample size (N>2,500) of older adults aged 60+ in SHARE's Wave 7. After excluding individuals for whom data on demographic characteristics were missing, our sample comprises 39,840 individuals: 17,558 men (44.1%) and 22,282 women (55.9%).

The calculation of health expectancy measures was based on the method introduced by Sullivan (1971). According to this method, the predicted years of life in particular states of health are calculated by combining age- and sex-specific cross-sectional prevalence rates with person-years lived in specific age categories, which were obtained from period life tables. This method of estimating prevalence-based health expectancy indicators allows remaining life expectancy to be divided into healthy and ill-healthy years. Sullivan's method is a widely used approach to health expectancy analysis that estimates health expectancy well over the long term, provided that changes in health are not sudden and are relatively regular (Mathers & Robine, 1997). The health expectancy measures estimation method is based on building life tables, which ensures that the measures are independent of age structures and comparable across time and populations.

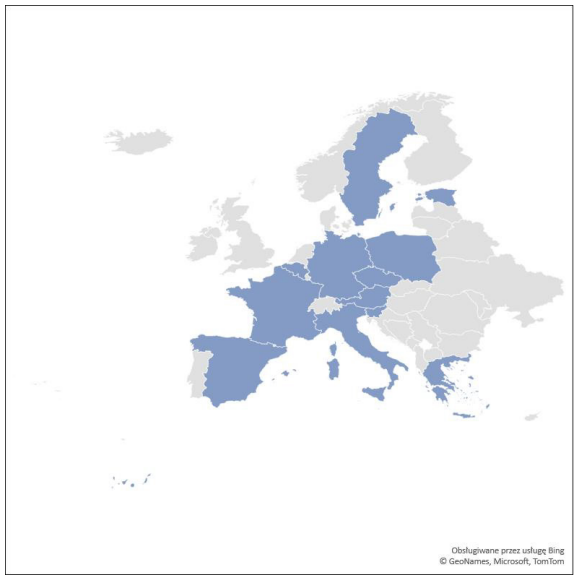

Fig. 1. Map of Europe showing the analysed countries.
Source: own elaboration

Healthy life expectancy indicators at age 60 ($HLEI_{60}$), which specifies the number of years that people aged 60 can expect in particular health states, are expressed as indices ranging from (1) to (5). These were determined according to the formula:

$$HLEI_{60} = \frac{1}{l_{60}} \sum_{a=60}^{85+} L_a P_a$$

where l_{60} is the numbers surviving to age 60, L_a is the person-years lived for each age interval (l_{60} and L_a from a period life table), and P_a is the observed prevalence of the health status for the age interval (for details on the method, see Jagger et al., 2007).

The multivariate nature of the measurement of health and health expectancies measures prompted us to use multivariate comparative analysis in the final part and to determine a synthetic measure or synthetic indicator of the health status of people aged 60+. This was done by linear ordering of objects based on a synthetic measure (Panek, 2009). The indices of health expectancies from (1) to (5) and life expectancies at age 60 (*LE at age 60*) were used as diagnostic variables. In the normalisation of indicators to make the diagnostic variables comparable, the zero unitarisation method was used (Kukuła, 2000). A benchmark was established consisting of the best values of each of the diagnostic variables and the Euclidean distances to this benchmark were calculated, and then the value of the synthetic measure was determined for each country. Countries were classified into three similar groups based on a division of the range of the synthetic measure.

4. Research

4.1. Prevalence of ill-health

There are significant differences in the prevalence of individual health problems and differences between countries (Fig. 2). Health limitations most often appear in global activity limitation and the

occurrence of two or more chronic morbidities, while limitations in basic activities are much less frequent, and disability associated with the inability to perform instrumental activities of daily living is the least frequent. In Estonia, there is a relatively high proportion of people aged 60+ with health status below good and global activity limitations, among both men and women (nearly 70%). In Poland, these percentages are also among the highest, as is the case with the incidence of chronic morbidities. In these two countries, as well as in the Czech Republic, Belgium, Greece and Spain, there is a significant proportion of people with limitations in basic ADLs – nearly one in three women aged 60+ has at least one such restriction. The proportion of women who are chronically ill, have limitations in performing basic activities and assess their health as poor or fair is greater than that of men. Only for limitations in performing instrumental activities of daily living (IADL) were there no differences in prevalence due to sex. It is worth noting that the occurrence of chronic morbidities (two or more) in most of the countries is not identical to poor self-reported health. Such a co-occurrence is only found in Poland, Estonia and Italy (the point markers for these measures in Fig. 2 all lie on the same grid line).

4.2. Health expectancy indicators

Table 1 shows our estimates of health expectancy indicators, which determine the average number of years a person aged 60 is expected to live in the particular health state. Table 2 specifies years of life in specific health states as a percentage of remaining life years for people aged 60.

Comparing life expectancy in a particular health state for older adults at age 60 across the analysed European countries brings to light huge disparities in the health of older adults between countries, for both men and women. At the same time, the disproportions in indicators are greater for health expectancy at 60 than for life expectancy at 60. The mean variation of *LE at age 60* measured by standard deviation is 1.7 years for men and 1.3 years for women, while, for instance, the standard deviations of *LE in good health* are 3.4 years for men and 3.5 years for women.

We observed very pronounced differences between the analysed countries in *LE in good health* and *LE without global activity limitation,* as well as in *LE without chronic morbidity or with one* (for women). For instance, in Sweden and Belgium, *LE in good health* of men aged 60 was over 15 years, whereas in Estonia it was only 4.5

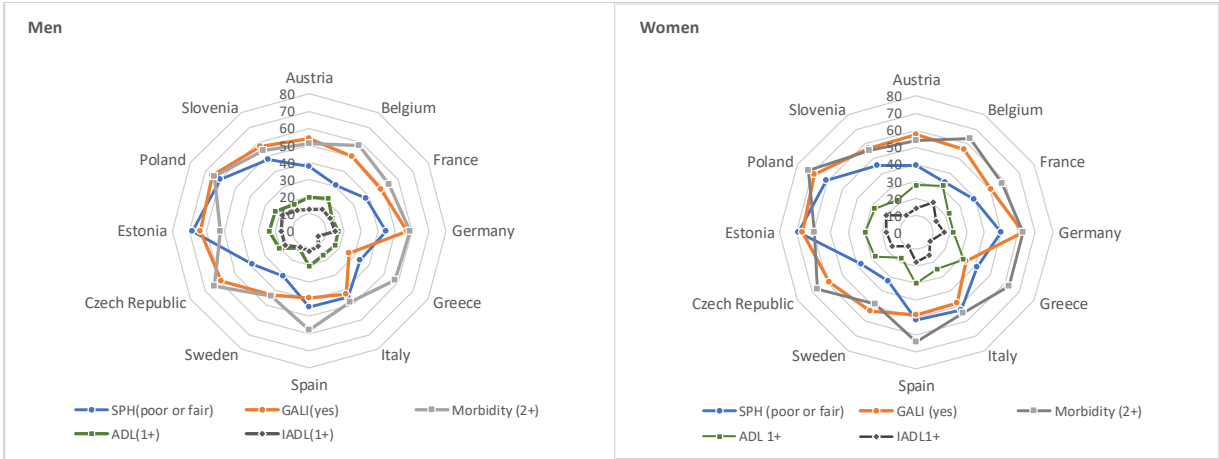

Fig. 2. Age-adjusted prevalence rates of ill-health measures[a] for population aged 60+ years, by country and sex.
[a] *SPH (poor or fair) – fair or poor self-reported health (less than good); GALI(yes) – health reductions in global activity limitation (lasting at least six months); Morbidity(2+) – the occurrence of two or more chronic diseases; ADL(1+) – one or more limitations in basic activities of daily living; IADL(1+) – one or more limitations in instrumental activities of daily living*
Source: Elaborated by the author

years, and in Poland 7.7 years. LE in good health for women ranged between 16.6 years in Sweden and Belgium and 5.2 years in Estonia, and was 9 years in Poland. By far the highest values of *LE without global activity limitation* were recorded for men and women in Greece, for whom the life expectancy in *HLY* at 60 is almost twice as long as in Estonia and the Czech Republic. Poles have the lowest *LE without chronic morbidity or with one*. Compared to Sweden, life without chronic morbidity or with only one in Poland is a little over one third as long for women (4.3 years vs 12.8 years) and a little over half as long for men (6.9 years vs 12.7 years). Differences among older adults from the analysed countries are smaller in the disability domain, i.e. *LE without ADL limitation* and *LE without IADL limitation*. However, life expectancy without disability remains lowest in Central and Eastern Europe (Estonia, Poland and the Czech Republic).

Analysing life expectancy in individual health states for men and women, we see that the differences between sexes are much smaller than differences in *LE at age 60*. The greatest sex-based differences occur for *LE without IADL limitation*. In the 12 countries, men at age 60 could expect an average of 21.7 years of life, which is 4.1 years less than for women (25.8 years), and for *LE without IADL limitation*, men could expect an average of 18.7 years, and women 21.1 years (a difference of 2.4 years). Health expectancy differences by sex varied from country to country. Thus, in Southern European countries (Greece, Italy and Spain), and in Belgium, men could expect to exceed women in *LE without ADL limitation, LE without chronic morbidity or with one and HLY*. In the remaining countries, in general, women have more years of life in better health than men, and particularly in Slovenia, Poland and Estonia.

Years lived in need of help and instrumental support (IADL) constitute from 6% (in Greece) to 20% (in Poland) of *LE at age 60* for men and from 11% (in Spain) to nearly 30% (in Estonia) of *LE at age 60* for women (Table 2). Years lived with personal care activity restrictions (ADL) account for a slightly larger proportion of the life years of older adults than do years with IADL. In most of the analysed countries, years lived with personal care activity restrictions account for over 30% of total LE for women, and nearly 40% in Estonia, Germany and Sweden. The proportion of life years with ADL restriction is lowest among women in Spain (20%), and then in Slovenia (25%) and Greece (26%). Of women's *LE at age 60*, the smallest percentage is spent without chronic morbidities or with no more than one, with this health status ranging from less than 20% (in Poland) to nearly 50% (in Spain). The proportion of life years with no chronic morbidities or only one is slightly higher for men

Table 1. Life expectancy and health expectancies indicators among men and women at age 60, by country

	Austria	Belgium	France	Germany	Greece	Italy	Spain	Sweden	Czech Republic	Estonia	Poland	Slovenia
						Men						
LE at age 60	24.1	22.2	23.1	21.6	22.0	23.1	23.0	23.2	19.6	18.6	19.0	21.1
LE in good health	14.6	15.3	14.0	11.8	14.2	12.5	12.5	15.9	13.1	4.5	7.7	10.9
LE without global activity limitation	10.7	11.0	11.6	9.2	15.9	12.8	13.7	12.9	8.1	7.0	11.7	9.1
LE without chronic morbidity or with one	11.3	9.3	10.4	8.8	9.1	11.7	9.4	12.7	7.2	9.1	6.9	9.6
LE without ADL limitation	18.8	17.2	19.2	18.0	18.0	19.0	17.8	20.2	15.8	14.4	14.7	17.3
LE without IADL limitation	20.7	18.8	19.5	18.3	20.6	20.5	19.9	20.6	16.5	15.7	15.3	18.1
						Women						
LE at age 60	27.1	25.8	27.8	25.3	25.4	26.6	27.5	25.8	23.8	24.5	23.9	25.5
LE in good health	15.3	16.6	15.9	12.0	13.9	11.5	12.1	16.6	15.8	5.2	9.0	13.3
LE without global activity limitation	10.7	10.9	12.6	9.0	15.9	12.7	13.3	11.5	9.6	7.7	12.0	10.5
LE without chronic morbidity or with one	11.5	9.1	10.8	8.9	8.6	11.0	8.9	12.8	7.6	9.5	4.3	10.8
LE without ADL limitation	18.0	16.5	19.9	18.9	16.1	18.4	17.3	20.7	16.7	16.4	16.5	18.9
LE without IADL limitation	22.1	19.7	22.9	20.5	22.4	21.4	21.2	23.1	19.7	19.8	18.7	22.1

Source: Elaborated by the author

Table 2. Health expectancy indicators among men and women at age 60, by country (in percent of life expectancy at age 60)

	Austria	Sweden	France	Italy	Spain	Belgium	Greece	Germany	Slovenia	Czech Republic	Poland	Estonia
						Men						
LE in good health	60.8%	68.6%	60.6%	54.1%	54.3%	69.0%	64.8%	54.7%	51.9%	66.8%	40.5%	24.4%
LE without global activity limitation	44.2%	55.5%	50.2%	55.6%	59.5%	49.6%	72.4%	42.6%	43.0%	41.3%	60.4%	37.4%
LE without chronic morbidity or with one	47.1%	54.7%	45.0%	50.6%	41.0%	42.1%	41.4%	40.7%	45.5%	36.5%	36.3%	48.9%
LE without ADL limitation	78.2%	87.1%	83.2%	82.4%	77.6%	77.5%	81.8%	83.1%	81.9%	80.4%	77.5%	77.4%
LE without IADL limitation	86.1%	88.5%	84.5%	88.7%	86.7%	84.9%	93.8%	84.5%	85.9%	84.1%	80.5%	84.6%
						Women						
LE in good health	57.3%	44.0%	56.3%	43.1%	64.4%	64.1%	52.3%	54.7%	47.4%	21.3%	37.6%	56.7%
LE without global activity limitation	45.3%	48.3%	39.4%	47.8%	44.5%	42.2%	41.2%	62.7%	35.6%	31.7%	50.0%	34.4%
LE without chronic morbidity or with one	38.7%	32.5%	42.3%	41.4%	49.5%	35.1%	42.2%	34.0%	35.1%	38.7%	17.8%	27.5%
LE without ADL limitation	71.4%	62.9%	66.3%	69.0%	80.1%	64.1%	73.9%	63.4%	74.7%	67.2%	68.8%	59.9%
LE without IADL limitation	82.5%	77.1%	81.5%	80.5%	89.4%	76.4%	86.7%	88.3%	81.0%	81.0%	78.0%	70.7%

Source: Elaborated by the author

than for women (from 36% in the Czech Republic and Poland to 55% in Sweden) and is similar to the proportion of years free of functional limitations (*HLY*). Men aged 60 years survive almost half of their remaining years of life without functional limitations due to poor health, ranging from 37% (in Estonia) to 72% (in Greece).

4.3. Synthetic measure of health

Table 3 presents the ordered estimations of the synthetic measure of health status produced by the multivariate analysis of health expectancy indicators and life expectancy, and a categorisation of the 12 countries into three groups according to their level of the measure. The higher the level of the indicator, the better the country's position in this ranking.

Sweden is in first place in terms of men's health status. Men aged 60 in Sweden had the best results of all analysed countries for *LE in good health, LE without morbidity* and *LE without ADL*. Second place for men was taken by Italy, whose results were close to the benchmark for most of the analysed health expectancy measures but were not the highest for any. Alongside Sweden and Italy, the Group I countries with the most favourable health status for men were Austria, Greece, Spain and France. Austria recorded the highest values of *LE at age 60* and the most years of life without IADL limitation. In Greece, 60-year-old men had the longest life without limitation in activity (GALI). There are three Group II countries, where the health status can be described as "good": Belgium, Germany and Slovenia. Group III has a low level of the synthetic measure and the worst health status for men, and alongside Estonia and Poland includes the Czech Republic. Men in Estonia had the shortest LE at age 60, the shortest life expectancy in good health and the shortest *HLY* and *LE without ADL limitation*. Men in Poland were furthest from the benchmark in terms of life expectancy with at most one chronic morbidity and *LE without IADL limitation*. In the Czech Republic, the synthetic measure of men's health was twice as high as in Poland and over three times as high as in Estonia, but at the same time it was only half that of Slovenia, which was ranked lowest in group II.

The results for women indicate that women in their 60s in France and Sweden have the best health status. French women at this age can enjoy the longest overall life expectancy (*LE at age 60*), and their life expectancy without IADL and ADL disabilities is close to the benchmark. Swedish women were a model for other countries in terms of life expectancy in good health and with zero to one chronic morbidities. Women in Sweden had slightly worse life expectancies without GALI functional limitations. Women in Austria, whose synthetic measure is similar to the results for Italy, have a long life in good health and without chronic morbidities. Italian women obtained a result close to the benchmark in the *LE at age 60* dimension and *LE without morbidity*. In group II, with an average

health status of women, Slovenia and Spain achieved the best results for the synthetic measure. Greece, Germany and Belgium, which are also in group II, obtained much lower values of this index than Slovenia and Spain. Moreover, in some dimensions of health status, these countries' performance was among the weakest in the entire group of 12 countries. For example, women in Greece were furthest from the benchmarks in the *LE without ADL limitation dimension*, and women in Germany had one of the shortest *HLY* life expectancies. Last in the ranking of countries are Czech Republic, Estonia and Poland, which obtained the lowest values of the synthetic health status indicator. Women in Estonia have the worst health indicators in terms of life expectancy in good health, without GALI functional limitations and without disability (ADL), and women in Poland have the shortest life expectancy with at most one chronic morbidity and without disability (IADL). Moreover, 60-year-old women in Poland and the Czech Republic have the shortest *LE at age 60*.

5. Conclusions and discussion

Analyses carried out for the population aged 60 and over in 12 European countries showed that the longest life expectancy is for life without disability restricting the ability to function basically in the environment (i.e. without IADL limitation), without disability hampering the performance of everyday activities (i.e. without ADL limitation), without chronic morbidities or with at most one, and without GALI functional limitations. A chronic morbidity may coexist with functional limitations that generally allow for general work, home or self-care activity and allow a person to remain independent in everyday life. Our study results confirmed that the majority of people reporting functional limitations do not report limitations in activity measured by ADL and IADL (Cambois et al., 2008; Jagger et al., 2010). Restrictions on performing activities that are considered necessary for independent living appear later – from the age of nearly 75 to 80 (depending on country). However, the emergence of a chronic morbidity or functional limitations may initiate further restrictions in instrumental or basic activities of daily living and be seen as a predictor of these limitations (Jagger et al., 2001; Jagger et al., 2010).

The study showed large disparities in health expectancy indicators between countries. This may indicate significant health inequalities in the later years of life in the analysed European countries.

Table 3. Synthetic measure of health and country classification into one of three groups[a]

Group number	**Men**		*Group number*	**Women**	
I	Sweden	0.847	**I**	France	0.779
I	Italy	0.765	**I**	Sweden	0.684
I	Austria	0.718	**I**	Austria	0.595
I	France	0.701	**I**	Italy	0.595
I	Spain	0.654	**II**	Slovenia	0.545
I	Greece	0.654	**II**	Spain	0.522
II	Belgium	0.557	**II**	Greece	0.441
II	Germany	0.463	**II**	Germany	0.394
II	Slovenia	0.440	**II**	Belgium	0.357
III	Czech Republic	0.223	**III**	Czech Republic	0.207
III	Poland	0.129	**III**	Estonia	0.106
III	Estonia	0.061	**III**	Poland	0.088

[a] Classification of country into group by dividing range of synthetic measure into three equal parts
Source: Elaborated by the author

These differences are greatest for life expectancy without functional limitations and life expectancy in good health, and are slightly smaller for years of life with disability. Generally, it can be observed that the more serious the difficulties and limitations in health, the smaller the difference between countries in life expectancy in a given health state. However, for each of the measures, including for LE without ADL and IADL disability, these differences remain high.

Our analyses confirmed greater differences between countries for the level of health expectancies than for life expectancy at age 60, and countries of Central and Eastern Europe can expect significantly fewer years of life without health restrictions than other more affluent countries (Jagger et al., 2011; Pongiglione et al., 2015; de Breij et al., 2019; Scherbov & Weber, 2017). As shown by the analyses of de Breij et al. (2019) for 18 European countries, macro-level factors, including higher total social expenditures, higher health expenditure and a higher replacement rate, reduced the differences between countries in post-retirement health. These factors can compensate for the occurrence of chronic morbidities and functional limitations and make them less severe for older adults in countries such as Belgium, France, Sweden, Austria and Greece, where life expectancy with good health assessments is much longer than life expectancy without chronic morbidities or functional limitations. The converse was true for Poland, Estonia and, to some extent, Italy. It is also possible that this may be influenced by cultural differences and the subjective perception of health status in different countries.

The sex-based results confirmed the overall report that although older women may experience worse health status and functional limitations more often, they have more years to live than men (e.g. Crimmins et al., 2011; Case & Paxson, 2005; Pongiglione et al., 2015; Van Oyen et al., 2012). Our life expectancy analyses based on a broader range of health measures have shown that differences in healthy life expectancy between men and women vary between health domains and are not the same across countries. Only for one health indicator – LE without IADL limitation – was the life expectancy of women longer than that of men across all countries. For other indicators, the health expectancy by sex was similar, or even longer for men (in Southern Europe) and longer for women (in Central and Eastern Europe). The reported sex differentials in health require further analyses covering other social and behavioural factors, and their mutual interactions. As shown in previous studies, it can be expected that in countries where men and women have similar lifestyles and behave similarly, their health status will be more similar (Crimmins et al., 2011; Molarius et al., 2006).

In essentially all countries, the age to which men can live without health problems causing functional limitations or limiting daily activity is greater than 65, which is the official retirement age in most of the countries analysed. The earliest such limitations and health problems appear in men in Estonia and Poland. Also for women in these two countries and in the Czech Republic, at close to or just over the age of 65, people may on average be limited in their activities of daily living and suffer from chronic morbidities, which reduces their capacity to work. Most of the other countries have a significantly longer expectancy in good health, with no functional limitations and no limitations in daily activities until after the age of 70. The older adults enjoying the best health are to be found in Sweden, France, Italy and Austria, as well as Slovenia, Spain and Greece.

Interesting as they are, the findings of our study should be considered with certain limitations in mind. First, the SHARE study did not include people living in an institution. In addition, the assessments of health status and its limitations are self-reported information, which may introduce biases into the results, as the perception of one's health status and experienced difficulties may be partly influenced by the respondents' level of knowledge about their health in general. Overall, the literature shows a tendency that the more severe the health and disability situation, such as personal care activity restrictions, the lower the sensitivity to variations in self-reporting (Tager et al., 1998). The computation method uses the cross-sectional and prevalence data approach, and not current risk of health limitations and disability. In the case that older adults' current living conditions and opportunities for medical or instrumental support are better than in the past, this may lead to an under-estimation of the measures of healthy life years. On the other hand, when the health situation of older adults deteriorates due to

unforeseen events, such as the COVID-19 pandemic situation, it may result in an over-estimation of both life expectancy and life expectancy in particular health states.

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