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14 Development of health over four years among middle-aged and older Europeans

- ► Older adults in Eastern and Central European countries have a higher risk of developing poor self-rated health over four years
- ► The same geographical pattern is seen for a higher risk of developing hypertension and diabetes
- ► Low educational level significantly increases the risk of developing poor self-perceived health

Ageing is associated with an increased risk of disease, and older adults have more diseases than younger adults. The increasing life expectancy from birth and not least the decline in mortality rates among older adults (Christensen 2009) have led to a discussion about the consequences of increased survival, especially in the older population. Is the increased survival a result of better treatment and access to health care leading to the survival of even frail older persons who would have otherwise died had they been born in earlier generations? Or is the increased survival reflecting a healthier life and improvements in health care and preventive measures leading to lower morbidity? These questions are of great interest to the individual as well as health care professionals, policy makers and other professionals involved in the organisation of health care systems.

In the past decades the literature has been dominated by a generally positive picture with a decline in cohort specific disability prevalence (Crimmins 2004, Donald 2010). In contrast, the prevalence of morbidity has been less optimistic in the most recent literature by showing increasing age-specific prevalence of common diseases (Christensen 2009, Crimmins 2011, King 2013). The question is, however, whether the higher prevalence is explained by higher incidences or by an increased survival with diseases. Incidence studies yield mixed results. In Norway, a large scale follow-up study has shown a decline in the age-adjusted incidence for coronary heart disease in middle-aged men, but an increase in middle-aged women (Mannsverk 2012). In stroke, incidence rates decreased in high income countries but increased markedly in low to middle income countries during the last decades (Feigin 2009). While prevalences based on cross-sectional studies of common diseases and health conditions are relatively easy to find, incidence data for cross-national comparisons are much harder to identify as such longitudinal studies are scarce.

Due to its longitudinal design, SHARE provides data on individuals developing diseases and functional declines over time. In the following we present the results of incidence data on common diseases and conditions over 4-years of follow-up. We used unweighted data on longitudinal respondents participating in SHARE Wave 2 (2006) and with a follow-up in SHARE Wave 4 (2010) about 4 years later. Twelve countries were included: Sweden (SE), Denmark (DK), Germany (DE), Belgium (BE), the Netherlands (NL), Austria (AT), Switzerland (CH), France (FR), Spain (ES), Italy (IT), Poland (PL) and the Czech Republic (CZ), and representing almost 20,000 individuals aged 50+ (N=19,141).

For details about the variables please see Lindholm Eriksen and colleagues in this volume. In addition to these we also analysed the variable "Do you have any long-term health problems, illness, disability or infirmity?", with two answer categories: No (0) or Yes (1), and Instrumental Activities of Daily Living (IADL), that is the ability to use a map to figure out how to get around in an unfamiliar place, to prepare a hot meal, to shop for groceries, to make telephone calls, to take medication, to do work around the house and garden, to manage money, such as paying bills and keeping track of expenses. Like the other variables, including ADL, IADL was dichotomized into two categories: (0) no IADL limitations and (1) one or more limitations ("1+IADL"). Incident cases were defined as not having the condition in Wave 2 but having the condition in Wave 4. We looked at incident cases of poor self-rated health, defined as participants who reported being in excellent, very good or good health in Wave 2, but who reported to be in fair or bad health 4 years later in Wave 4. Incident cases of suffering from a chronic or long-term health problem was defined as reporting 'No' in Wave 2, but 'Yes' in Wave 4. Incident cases of more than six months' limitation of activities people usually do due to a health problem (Global Activity Limitation Indicator; GALI) were defined as having no limitation at all in Wave 2, but reporting a non-severe limitation or a severe limitation in Wave 4. Incident cases of being limited in activities in daily living (1+ADL) or in instrumental activities (1+IADL) were defined similarly, i.e. having no limitations in Wave 2, but having at least one limitation in Wave 4. Similarly with incident diseases, e. g. reporting no hypertension in Wave 2, but incident hypertension in Wave 4; likewise for diabetes and cardiovascular diseases. In stroke and heart attack, both diseases which may occur more than once in a person, specific questions were asked about having a new incident of stroke or heart attack since last interview. For methodological details please see Lindholm Eriksen and colleagues in this volume.

All analyses were done with adjustment for age and gender (basic model), as well as adjustment for time-interval between Wave 2 and Wave 4 (months), due to the fact that time interval at the individual level varied from 42 to 65 months between the two waves. Initially, all analyses were also made with adjustments for lifestyle factors (smoking, low physical activity, high body mass index (BMI)) and educational level, but these adjustments did not significantly change the results

from the basic model. For reasons of comparisons with country specific national health surveys we chose to present only the results based on the basic model.

Finally, in analyses of the association between socioeconomic conditions on incident poor self-rated health, both education and wealth were used as independent variables. Educational level categorised according to ISCED codes (high, medium and low educational level). Wealth was defined as the sum of all financial and real assets (minus liabilities) and categorised into country-specific tertiles.

Overall, the longitudinal analyses were made on a total number of 18,375 respondents, but due to missing information in the different variables the actual numbers of respondents in the various analyses are given in the figures.

Logistic regression was used to model the incidence proportion of specified chronic diseases, self-perceived health, long-standing illness, limitations in daily activities for at least six months (GALI), disability (1+ADL and 1+IADL) and death between the two waves. Incidence is reported as the proportion of new cases developing from Wave 2 to Wave 4.

14.1 Higher risk of developing adverse health outcomes in the Eastern and Southern European SHARE countries

The 4-year follow-up between SHARE Waves 2 and 4 allowed us for the first time to compare the incidence of common diseases and chronic conditions in a cross-national setting including two Eastern European SHARE countries, the Czech Republic and Poland. It was interesting to see that the incidence of reporting the development of poor self-perceived health between the two waves was among the highest in these two Eastern European countries together with the Southern European countries Spain and Italy (all above 25 %), closely followed by Germany and Austria, while the more Western and Northern SHARE countries together with Switzerland had lower incidences (Figure 14.1). This may partly be explained by more incident cases of participants with long-term health problems (Figure 14.2) and impairments in instrumental activities of daily living (1+IADL) (Figure 14.3) as these countries with the exception of Italy, in general showed the same geographical pattern as incident poor health. An incident functional decline in basic activities of daily living (1+ADL) (Figure 14.4) was more evenly distributed across the countries with the exception of Poland, which had the highest incidence proportion. Conversely, the more Northern European SHARE countries such as the Netherlands and Denmark, together with Switzerland and to some extent Sweden and Belgium showed lower incident cases of adverse self-perceived general health.
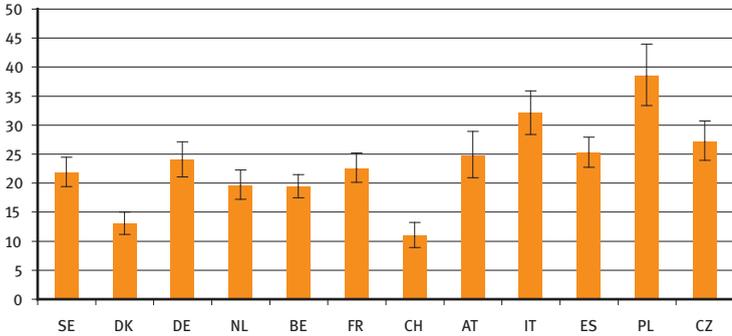
Figure 14.1: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident fair or poor self-perceived health from Wave 2 to Wave 4. (N=11,812)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
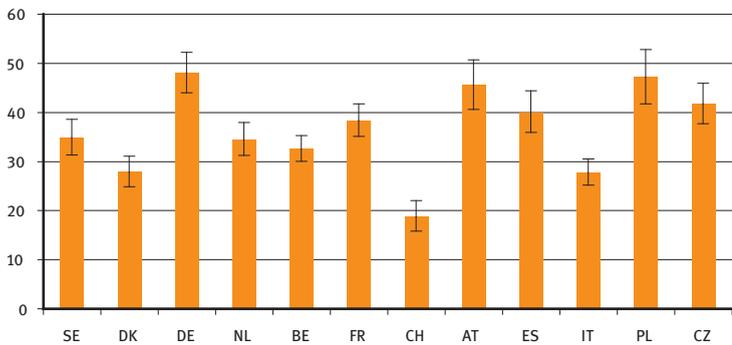Source: Wave 2 release 2.5.0, Wave 4 release 1

Figure 14.2: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident long-term health problems from Wave 2 to Wave 4. (N=9,251)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
Source: Wave 2 release 2.5.0, Wave 4 release 1

The GALI question aims at describing those who because of a health problem develop limitation in activities people normally do and lasting for more than six months. The incidence proportions were rather high, approximately 25 to 40 per cent when looking at incident cases, i.e. cases who reported being not limited at all in Wave 2, but reporting to be limited, severely or not severely in Wave 4 (Figure 14.5). This striking increase between the two waves was, however, mainly
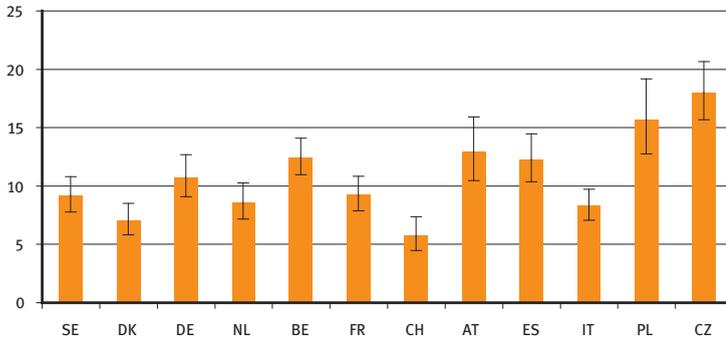
Figure 14.3: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident impairment in instrumental activities of daily living (1+IADL) from Wave 2 to Wave 4 (N=15,297)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
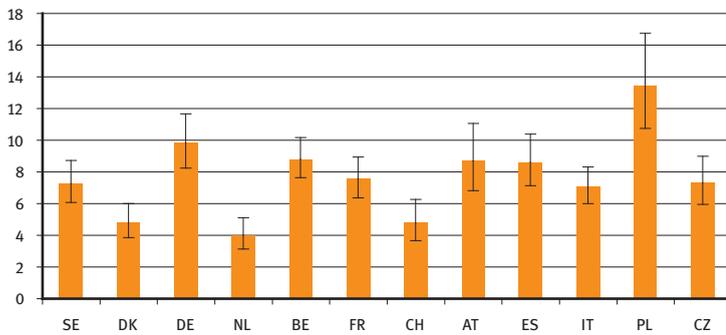Source: Wave 2 release 2.5.0, Wave 4 release 1

Figure 14.4: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident impairment in basic activities of daily living (1+ADL) from Wave 2 to Wave 4 (N=16,125)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
Source: Wave 2 release 2.5.0, Wave 4 release 1

accounted for by incident cases of not severely limited cases as seen in Figure 14.6. Again, the geographical pattern showed the lowest incidence proportions for the Northern SHARE countries and Switzerland.
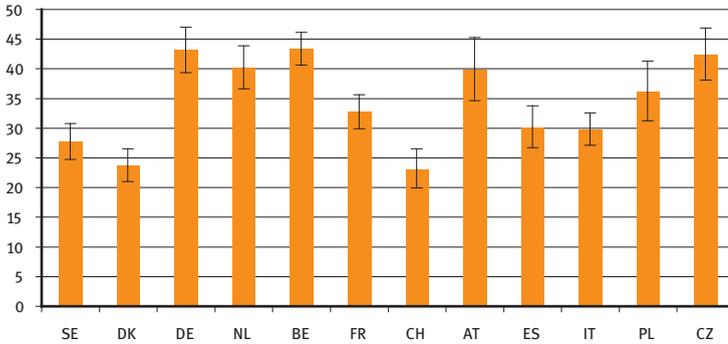
Figure 14.5: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident limitations, both severely and non-severely, in usual activities for at least six months and due to a health problem from Wave 2 to Wave 4 (N=10,254)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
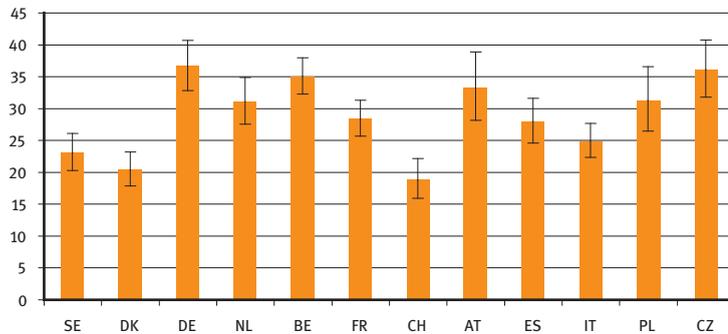Source: Wave 2 release 2.5.0, Wave 4 release 1

Figure 14.6: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident limitations, only non-severely, in usual activities for at least six months and due to a health problem, from Wave 2 to Wave 4 (N=9,497)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
Source: Wave 2 release 2.5.0, Wave 4 release 1

14.2 Higher risk of developing cardio-vascular diseases in the Eastern and Southern European SHARE countries

With respect to the incidence of cardio-vascular diseases and the diseases predisposing to cardio-vascular disease, i. e. hypertension and diabetes, cross-national comparisons showed an almost similar geographical pattern as seen with the self-perceived general and functional health outcomes earlier in this chapter. In the case of diabetes, the incidence was generally higher in the more Eastern and Continental countries (Poland, the Czech Republic, Austria and Germany) and in the Southern European countries (Spain and Italy) (Figure 14.7). A similar geographical pattern was observed for hypertension (Figure 14.8).

No clear geographical pattern could be seen in the incidence of cardiovascular diseases (Figure 14.9) except for Denmark and Switzerland reporting the lowest incidence proportions, but in incident heart attack (Figure 14.10) there was a marked geographical pattern of higher incidence proportions in the most Eastern and Southern SHARE countries. In contrast, incident stroke (Figure 14.11) was almost uniformly distributed across the participating countries. It is noteworthy that Switzerland showed the lowest (or was among the lowest) incidence proportions in cardiovascular disease, heart attack and stroke, and the predisposing diseases diabetes and hypertension.
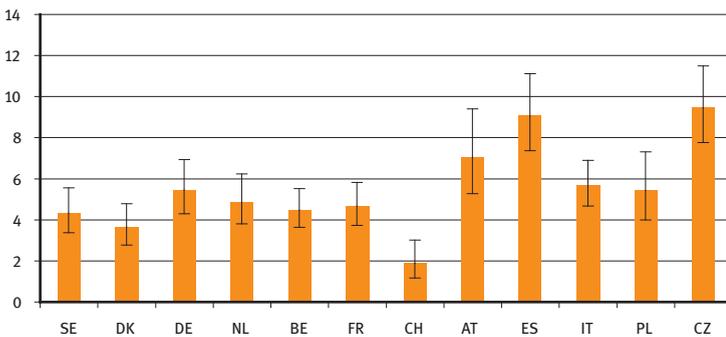

Figure 14.7: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident diabetes from Wave 2 to Wave 4 (N=15,860)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
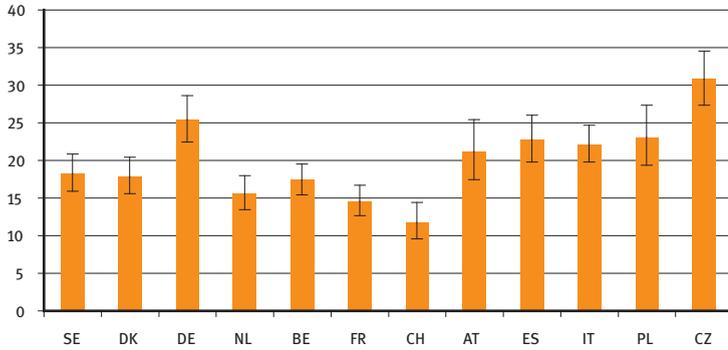Source: Wave 2 release 2.5.0, Wave 4 release 1

Figure 14.8: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident hypertension from Wave 2 to Wave 4 (N=11,489)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
Source: Wave 2 release 2.5.0, Wave 4 release 1

Figure 14.9: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident cardio-vascular disease from Wave 2 to Wave 4 (N=15,564)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whisker represents confidence intervals (CI).
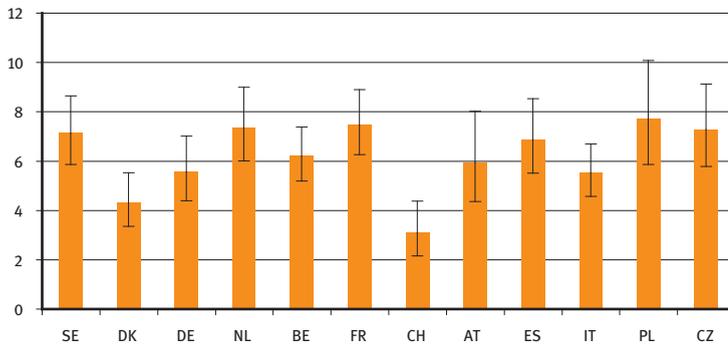Source: Wave 2 release 2.5.0, Wave 4 release 1

Figure 14.10: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident heart attack from Wave 2 to Wave 4 (N=17,451)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
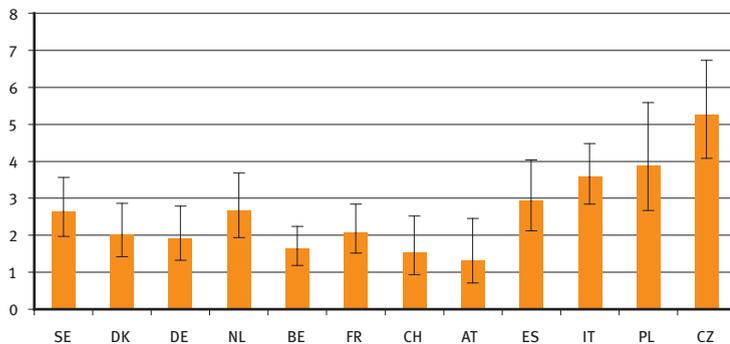Source: Wave 2 release 2.5.0, Wave 4 release 1

Figure 14.11: Country specific 4-year incidence proportions (y-axis %) of respondents developing incident stroke from Wave 2 to Wave 4 (N=17,442)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
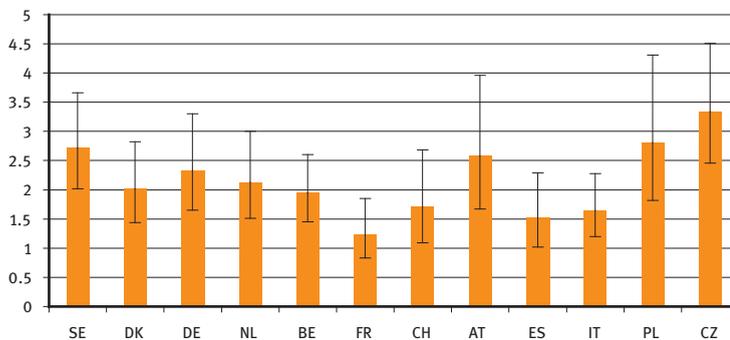Source: Wave 2 release 2.5.0, Wave 4 release 1

14.3 Cross-national comparisons of incident deaths mirror life expectancy at age 50

Among the SHARE countries incident deaths were most common in the Eastern European countries, Spain and Denmark, but confidence intervals were large and overlapping due to the low numbers of observations. But it was interesting to note that incident cases of deaths (mortality), with the exception of Spain, showed an almost similar pattern with known life expectancies at age 50 in the same countries. According to the 2011 Eurostat life expectancy tables (EUROSTAT 2012), Denmark is, within the SHARE countries participating in both Waves 2 and 4, the country with the third lowest life expectancy at age 50 (31.5 years) closely followed by the Czech Republic (29.8 years) and Poland (29.5 years). Noteworthy was also the discrepancy between the low incident proportions of adverse self-reported health outcomes e. g. poor self-perceived health, and the high incidence proportions of deaths observed in Denmark (Figure 14.12).
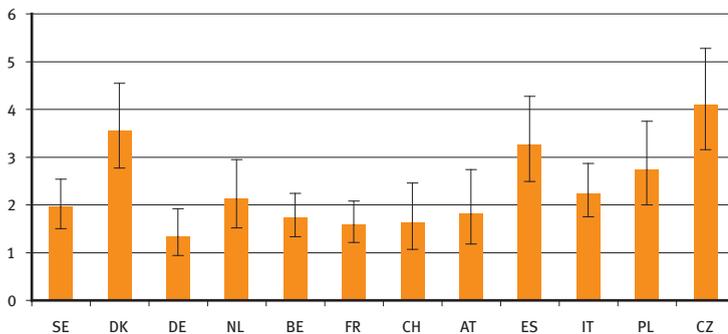

Figure 14.12: Country specific 4-year incidence proportions (y-axis %) of respondents dying between Wave 2 and Wave 4 (N=18,375)
Notes: Adjusted for age, gender and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
Source: Wave 2 release 2.5.0, Wave 4 release 1

14.4 Low socioeconomic status significantly increases the risk of incident poor self-perceived health but with no geographical pattern

Self-perceived health is a well-known predictor of mortality (Idler 1997), and is influenced by education (Bago d'Uva 2008) and wealth (Doorslaer 1997). We analysed the influence of socioeconomic status by education and by wealth on the incidence of developing poor self-perceived health from SHARE Wave 2 to Wave 4.

Analyses of the risk of going from an excellent, very good or good self-perceived health to fair or poor self-perceived health clearly showed that the educational level matters (Figure 14.13). Especially the lowest educational level was in most countries associated with a significantly higher odds of developing poor health, odds ratios (OR) being between 1.59 to 6.16, the exceptions being Germany, Poland and Italy, which may be explained by low number of observations. Having a medium level of education had a significant negative effect only in the Czech Republic, Spain, Austria, Switzerland, Germany and Sweden with ORs between 1.56 and 3.09.
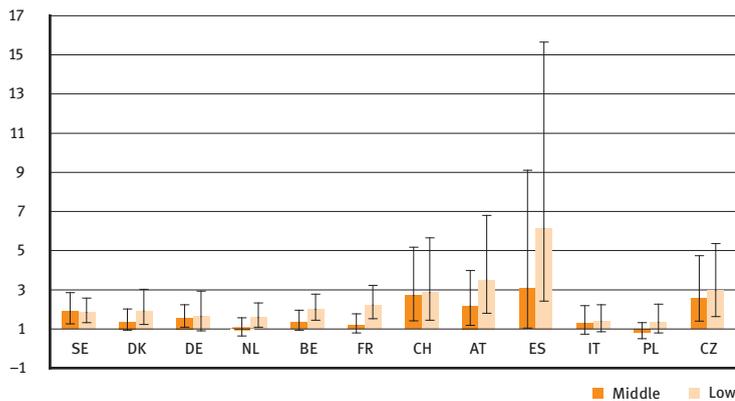

Figure 14.13: Country-specific odds ratios (OR) for developing poor self-perceived health between Wave 2 and Wave 4 in relation to educational level by ISCED categories (middle and low) (N=11,812)
Notes: Reference group is the highest educational group (post-secondary education). Adjusted for age, gender, and time interval. Unweighted data. Whiskers represent confidence intervals (CI).
Source: Wave 2 release 2.5.0, Wave 4 release 1

Although Austria and in particular Spain could be noted for presenting with the highest ORs in both the lowest and medium educational levels confidence intervals were overlapping with the other countries, and may thus not represent a true country specific difference from the other SHARE countries. However, the ORs remain significant and should thus lead to further investigation of this area.

Also, being less wealthy was associated with an increased risk of adverse health outcome. Participants in the lowest wealth tertile had a significantly higher risk of incident poor self-perceived health in almost all countries (ORs between 1.70 and 2.83) with the exception of Austria, the Czech Republic and Poland. Being in the medium wealth tertile had less impact on the risk of incident poor self-rated health in most countries, with the exceptions of Sweden, Denmark, Belgium, Spain and the Czech Republic (Figure. 14.14). As with educational level country specific confidence intervals are overlapping and does not allow to interpret the results at the institutional level.
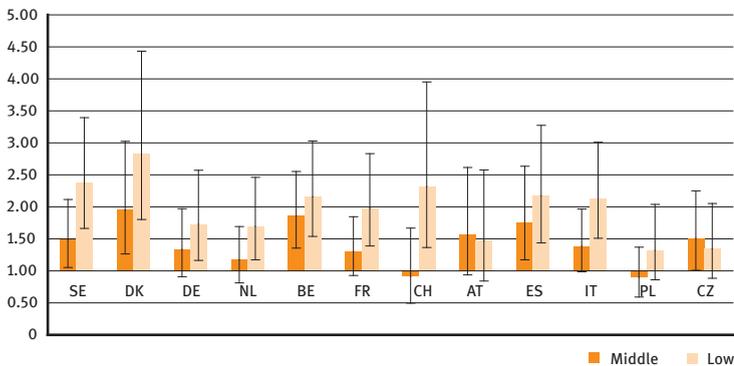

Figure 14.14: Country-specific odds ratios (OR) for developing poor self-perceived health between Wave 2 and Wave 4 in relation to wealth tertiles (N=11,811)
Notes: Reference group is the highest wealth tertile. Adjusted for age, gender, and time interval. Whiskers represent confidence intervals (CI).
Source: Wave 2 release 2.5.0, Wave 4 release 1

14.5 Increasing active ageing in Europe by prioritizing countries with the highest incidences of adverse health outcomes

Overall, a pattern of more incident cases of adverse health outcomes could be detected in the Eastern and Southern countries, but also in Germany and Austria. The presented results were adjusted for age and gender, but even when adjusting for potential confounders such as BMI, physical activity, smoking and socio-economic status, the results did not change significantly. However, although there is a clear geographical pattern our results must be interpreted with caution since the analyses were carried out on unweighted data sets of Wave 2 and Wave 4.

The year 2012 was the European Union year of Active Ageing and Intergenerational Solidarity. With this initiative the European Union aimed at addressing the challenges arising from the ageing European population and the need for strategies in promoting active ageing. In continuation of this the European Union has set a goal of raising the average number of healthy life years (HLY) by two years by year 2020 (European Commision 2012). HLY is defined as years of life without any long-standing limitations in activities people normally do (e. g. GALI = not limited) and is used to monitor healthy life expectancy in Europe (van Oyen 2006). Based on the presented results it may be suggested that focus is pointed at those countries with the highest incidences of adverse health outcomes, especially the Eastern European countries. This is also supported by the cross-sectional results of Wave 4 in which three additional Eastern European countries, Slovenia, Hungary and Estonia, showed higher prevalences of poor subjective health outcomes and common diseases (see Lindholm Eriksen and colleagues in this volume).

The coming decades will bring along large cohorts of older people due to the big post-World War II birth cohorts hitting retirement age. The current low fertility rate in most European countries is adding to the societal challenges of an ageing population, including the organisation and costs of future health care in an ageing European population (Christiansen 2012). Therefore it is of great importance to address how we may adapt institutional factors in order to increase healthy ageing. By increasing healthy ageing we also increase active ageing and intergenerational solidarity.

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