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Research paper

Disparities in multimorbidity across Europe – Findings from the SHARE Survey



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ABSTRACT

Introduction: Europe is the continent with the highest share of older adults, many of which suffer from multiple chronic conditions (multimorbidity) and the associated negative outcomes. Health inequalities across European regions exist, but little is known about regional differences in multimorbidity.

Material and methods: Cross-sectional analyses of data collected in the 5th wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) during 2013. The study population included 50+-year-olds from 14 European countries and Israel.

Results: Across all regions age and gender adjusted multimorbidity prevalence was 31.4% [30.7; 32.2]. Northern Europe had the lowest multimorbidity prevalence of 26.2% [25.2; 27.1], while Eastern and Central Europe had the highest, 35.2% [33.8; 36.5] and 34.8% [33.8; 35.9], respectively. In all regions female gender, increasing age, lower education, and lower household income were independently and significantly associated with higher odds of multimorbidity. Interestingly, 70–79-year-old Central and Eastern Europeans suffered from about the same level of multimorbidity as 80 ± year old northern Europeans. A similar pattern was seen for high education versus low education in Central and Eastern Europe compared to Northern Europe.

Conclusion: Multimorbidity is highly prevalent among older Europeans, but more so among Europeans in the Eastern and Central regions. Societal initiatives to improve health care for older adults are warranted in order to decrease old age health inequalities between European regions, where Central and Eastern European regions seem to suffer more from the burden of multimorbidity.

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1. Introduction

Population ageing is happening all over the developed world [1,2], in particular in Europe, which today is the oldest-old continent [2]. Ageing is associated with an increased risk of developing diseases [3], leading to loss of functions and risk of subsequent disability [4]. Furthermore, with advancing age the number of concomitant chronic diseases and conditions increases. The co-existence of two or more chronic conditions is defined as multimorbidity [5]. Whereas *multimorbidity* describes the totality of chronic conditions, another similar term, *comorbidity*, is concerned with conditions that co-occur with a specific primary or index disease [6].

Determinants of multimorbidity have repeatedly been shown to consist of age, female gender, low socio-economic status, and

lower educational level (reviewed in [5]). Moreover, multimorbidity has been associated with decreases in quality of life, self-rated health [7] and functional ability [8,9], as well as increases in hospitalization, physiological distress, mortality, use of health-care resources, and costs [7,8,10,11]. With population ageing, multimorbidity is gradually being recognized as a challenge for health-care systems [12,13].

While a number of European studies have assessed the burden of multimorbidity at national level [14–18], only two cross-national comparative studies [19,20], both based on the Survey of Health, Ageing, and Retirement in Europe (SHARE) has been identified. In both studies, Switzerland and the Netherlands had the lowest prevalence, while Hungary, Estonia, Poland, and Portugal had the highest, but there was no special attention put to regional differences. The lack of cross-national comparative studies is most likely explained by the lack of standardization of definition and assessment of multimorbidity, as well as differences in study populations [5,21].

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In 2013, a thorough report from the European Commission [22] showed that health inequalities exist within Europe with Eastern European countries suffering from shorter life expectancy at birth than the other European regions. Also alarming is that while all European countries experienced improvements in life expectancy at age 65 from 2002–2004 to 2007–2009, the increase was lowest in most of the eastern countries of Europe [22], suggesting that there are only small improvements in health care in Eastern Europe compared to the rest of Europe. In other words, there is an inequality in health between the European regions with Eastern Europe being less healthy.

This paper aims at describing whether inequality in health across the European regions can be associated with differences in multimorbidity burden.

2. Material and methods

2.1. Study population

We used cross-sectional data from the 5th wave [23] of the *Survey of Health, Ageing and Retirement in Europe* (SHARE). SHARE is a cross-national panel survey collecting data concerning health, economy and social networks of 50+ year-olds living in Europe (+ Israel) [24]. The 5th wave of SHARE was conducted in 2012–2013 in 15 countries (i.e. Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Switzerland, Belgium, Czech Republic, Luxembourg, Slovenia, Estonia and Israel). Hungary, Poland, and Portugal did not participate in wave 5 [25].

2.2. Data collection and variables

Data were collected through computer assisted face-to-face interviews (CAPI) using an ex-ante harmonized generic questionnaire that was translated to the respective national languages of the participating countries. SHARE organizes central ‘hands on’ training of representatives of all the national survey agencies. The outline of the central training was repeated in the national SHARE training of survey agency interviewers before the field study [26]. Proxy information was allowed [25].

2.2.1. Chronic conditions

Information on diseases and chronic conditions was obtained through self-report. Participants were handed a show card with a numbered list of specific chronic conditions listed and asked: “Has a doctor ever told you that you had/Do you currently have any of the conditions on this card? With this we mean that a doctor has told you that you have this condition, and that you are either being treated for or bothered by this condition” [27]. The participant mentioned the relevant disease(s) by their number. The card had 16 conditions and diseases listed, but we chose to only include the 12 most disabling diseases in the analysis: (1) high blood pressure or hypertension (‘hypertension’), (2) diabetes or high blood sugar (‘diabetes’), (3) osteoarthritis, (4) rheumatoid arthritis, (5) heart attack, including myocardial infarction or coronary thrombosis or any other heart problem including congestive heart failure (‘heart disease’), (6) stroke, (7) cancer or malignant tumour, including leukaemia or lymphoma, but excluding minor skin cancers (‘cancer’), (8) chronic lung disease, (9) hip fracture or femoral fracture (‘hip fracture’), (10) Parkinson’s disease, (11) Alzheimer’s disease, dementia or senility (‘dementia’), (12) affective or emotional disorders). The following 4 conditions were not included: high blood cholesterol,

stomach or duodenal ulcer/peptic ulcer, cataracts, and ‘other fractures’.

2.2.2. Multimorbidity

Multimorbidity was defined as the coexistence of two or more chronic conditions [5].

2.2.3. Educational level

Education was determined by the question: “What is the highest school leaving certificate or school degree that you have obtained?” [27]. SHARE uses the 1997 International Standard Classification of Education (ISCED-97) to standardize educational level across Europe [25]. ISCED-97 is a 7-point scale ranging from 0 = pre-primary education to 6 = second stage of tertiary education (leading to an advanced research qualification) [28]. For the purpose of easing the interpretation of the analysis, the variable was re-categorized into three levels:

- 0 = low educational level (encompassing ISCED-97 codes 0, 1 and 2);
- 1 = medium educational level (encompassing ISCED-97 codes 3 and 4);
- 2 = high educational level (encompassing the ISCED-97 codes 5 and 6).

2.2.4. Household income

Household income was determined through the question: “How much was the overall income, after taxes and contributions, that your entire household had in an average month in year 2012?” [27]. The range of income reported by all individuals was divided into tertiles (low, medium and high).

2.2.5. European regions

The 15 countries were divided into four regions:

- Northern Europe (Denmark, Sweden, the Netherlands);
- Southern Europe (Italy, Spain, France, Israel);
- Central Europe (Austria, Belgium, Germany, Switzerland, Luxembourg);
- Eastern Europe (Czech Republic, Slovenia, Estonia).

2.3. Statistical analysis

Data was analysed using STATA version 14.0.

Crude as well as age and gender adjusted prevalence of chronic conditions and multimorbidity (including multimorbidity prevalences across sociodemographic factors) were analysed for the total study population and across regions and reported with 95% Confidence Intervals. Significance of differences in multimorbidity proportions across the socio-demographic variables was assessed by chi-square test (X^2). For variables with more than two levels (age groups, educational level and household income) a chi-square test for trend was conducted. A P -value < 0.05 was determined as the significance level.

Association of socio-demographic factors with multimorbidity was assessed through firstly a univariate logistic regression and then through a multivariate logistic regression in order to assess the independent association. Odds ratios (OR) was reported for the regression analysis.

Calibrated individual weights, provided in the SHARE dataset, were applied to the analyses as a means to reduce the impact of potential selectivity bias that might be present in the data due to unit non-response and panel attrition [25].

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