Revista de cercetare și intervenție socială

INDIVIDUAL AND CONTEXTUAL FACTORS IN SELF-RATED HEALTH INEQUALITIES: A COMPARISON BETWEEN ROMANIA, 10NMS AND EU15

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Individual and Contextual Factors in Self-Rated Health Inequalities: A Comparison between Romania, 10NMS and EU15

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Abstract

Romania, as part of EU, distinguishes itself from the other groups of EU countries in many respects. The paper takes stock of prior findings on health inequalities in Romania and sets out to explore the pattern of inequalities in self-reported health status in Romania in comparison to ten NMS and EU15. Drawing on individual data gathered on national representative samples through European Quality of Life Survey (EQLS), a logistic regression was carried out in order to assess the role of individual and contextual factors in shaping the patterns of inequalities in self-reported health in Romania in comparison to two major groups of European countries. Research findings indicate that individual factors like age, gender, education, employment status and income are key to understanding inequalities in self-rated health in Romania and the analysed groups of countries, this proving to a universal pattern. Contextual factors proved to be less important in determining self-rated health in Romania while they may play a more important role in two groups of countries considered here. Inequalities are more pronounced in Romania in what regards sex and education in comparison to the two analysed groups of countries. Evaluation of health services is a crucial factor in Romania and the two groups of countries in self-rated health while the role of environmental factors is not important in Romania and varies in the country between NMS10 and EU15.

Keywords: self-reported health; individual factors; contextual factors; Romania; EU15.

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Introduction

Inequalities in health have not been studied systematically in Romania. Some descriptive studies based on survey data (Marginean et al., 2006) revealed higher inequalities in self-rated health in Romania in comparison to Western countries. They also showed the key importance of social gradients (age, gender, income, education) in health in this country while also pointing out to variation by rural/ urban in health inequalities. Inequalities in life expectancy and mortality rates were also highlighted in Romania (Eurostat, 2010; Pop, 2010) by rural/urban and development region.

There are indications that inequalities in health are high in Romania and that the pattern of inequalities differs significantly in this country in comparison to Western countries. Looking at life expectancy for example, a summary measure of the age-specific mortality risks as observed in a particular period of time, we notice that, in Romania, life expectancy is among the lowest in Europe: in 2010 life expectancy was 73.8 years in Romania, the third lowest value in EU after Latvia (73.7 years) and Lithuania (73.5 years). There is an important gap that separates Romania from both the majority of New Member States (NMS) and the most developed countries in EU in terms of life expectancy as, for example, there is a 7.3 years differential between EU15 (where people live on average 81.1 years, according to data from 2009) and Romania. Even though in Romania life expectancy increased slightly in time, with a more significant rise of 2.6 years from 2000 to 2010, there are still important differences between the more developed countries in Europe and the country under scrutiny here, according to data from Eurostat 2010. Moreover, a series of inequalities are evident in life expectancy. Inequalities by gender describe a very clear model. Although there is a universal pattern of gender disparity in terms of life expectancy, in Romania the gap between women and men is higher than in the developed countries. In EU15 the gender differential varies between 3.9 years in UK and 7 years in France. Romania shares the pattern of most new member states, with a gender differential of 7.5 years, similar with Bulgaria (7.1 years) or Slovakia (7.6 years). Over time, the difference between genders grew higher as in 1980 the difference in life years between men and women was 5.3, whereas in 2010 it grew to 7.5[4].

Another study examines more in detail this gender disparity in health. Furnée, Groot and Pfann (2011), drawing on individual data from 13 countries and based on a meta-analytical approach, have shown the effect of income on self-reported poor health across countries for men and women, while also controlling for age, since that factor is known to affect self-reported health. Using least-squares techniques, they find evidences of a high gender disparity in income effect on

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[4] See data from the National Institute of Statistics, Romania, http://www.insse.ro/cms/rw/pages/ index.en.do

self-reported poor health (SRPH). As authors stated, men who report similar levels of SRPH as women have incomes 26% higher than their female counterparts. They also found that controlling for age explains 38% points of the observed income effect on SRPH. Likewise, an income effect is clearly found in each country, but the size of this effect varies across countries, though the meta-analytical approach the authors employ do not allow to account for these variations across countries.

The authors conclude that the relationship between income and SRPH is best described as log-linear. Such a model assumes a constant change in the proportion of incidence in SRPH outcomes across the income deciles. The slope of the log-linear relationship between income and SRPH indicates the strength of this relationship: a steeper downward or negative slope implies a large difference in SRPH outcomes between the reference group and preceding lower income groups (Furnée, Groot & Pfann, 2011, 778).

Beside the gender gap, in Romania there are also other inequalities which are evident in life expectancy data from 2010 by urban-rural and development region (Mackenbach, 2006). Life expectancy is higher in urban in comparison to rural (2.1 years difference). Furthermore, life expectancy varies by development region, with differences between developed regions and the less developed ones up to 2.2 years (Mackenbach, 2006).

When investigating inequalities in self-rated health in 19 European countries, some evidence was found (Mackenbach, Stirbu, Roskam, Schaap, Menvielle, Leinsalu, et al, 2008) for the hypothesis that inequalities in self-assessed health in Eastern Europe tend to be rather large, without however being clear that they are larger than in Western European countries. If in case of self-rated health evidence of a divide between Eastern and Western countries is still unclear, with regard to other health indicators research results are more straightforward. Inequalities in mortality and life expectancy were proved to be much larger in many Eastern European countries in comparison to Western countries. When looking at mortality, for example, it was shown for the former group of countries that, during transition, mortality rates changed remarkably, often for the worse, while inequalities have deepen. In countries like Estonia and Hungary inequalities in mortality severely increased and in the lower socio-economic groups mortality rates deteriorated to a higher extent. It was explained that increased risks brought about by transition in these countries have led to this pattern: the increasing economic insecurity and poverty; the breakdown of protective social, public health and health care institutions; and a rise in excessive drinking and other risk factors for premature mortality (Mackenbach et al, 2008). When looking at inequalities in self-rated health in 19 European countries, the same source has shown large health inequalities within all countries surveyed and concluded that health inequalities are deeply rooted in the social stratification systems of modern societies.

The study revealed that poor assessments of health have higher prevalence in lower socio-economic groups and that the pattern is highly stable over time.

Another explanatory study of health inequalities (Cummins, Stafford, Macintyre, Marmot and Ellaway, 2005) analysed and compared the association between socioeconomic status and health outcomes in and between European countries, by using regression-based inequality indexes. Research results showed a clear pattern of important inequalities by socio-economic status in all countries and higher inequalities in the Eastern and Baltic countries included in the study, especially when looking at mortality rates. It seems that access to health might explain inequalities in mortality in case of countries from Eastern Europe.

The role of socio-economic determinants in health inequalities is largely acknowledged in the literature (Cummins et al, 2005; Pickett and Pearl, 2001; Wilkinson, 2005). It was shown that health inequalities vary by socio-economic status due to specific health determinants which are distributed by socio-economic groups. People belonging to lower socio-economic layers are more exposed to a series of risk factors of morbidity and mortality and some authors rightly propose to take into account these inequalities in exposure to specific health determinants in the explanation of health inequalities (Mackenbach et al, 2008). In fact, for those situated at the bottom of socio-economic ladder, a combination of factors can account for their disadvantaged position in comparison to other groups: low income, occupational health risks, health risks relating to improper housing conditions, as well as psychosocial stress and subsequent risk-taking behaviours (e.g. smoking, heavy drinking), reduced access to health-promoting facilities and products (e.g. sports).

Besides the key role of individual factors in shaping health inequalities, a series of studies reviewed in the literature (Stafford and Marmot, 2003) showed significant associations between characteristics of neighbourhoods and health outcomes. Even though contextual effects are rather modest in comparison to individual socio-economic status, research results have proved to be consistent. Some authors (Wilkinson, 2005) investigated associations between measures of neighbourhood social and material environment and self-rated health in England and Scotland. Starting from the idea that intervention at the area level constitutes an important strategy to minimizing health inequalities, they discovered that fair to very bad self-rated health was significantly associated with a series of neighbourhood attributes like poor physical quality residential environment, left wing political climate, low political engagement, high unemployment, lower access to private transport, and lower transport wealth. These associations were found to be independent of sex, age, social class, and economic activity. It is worth mentioning also attempts (Riva, Bambra, Curtis and Gauvin, 2010) to test two different models with the aim to understand the role of area-level conditions and that of socio-economic circumstances in determining health: the 'collective resources' and the 'local social inequality' models. The first model assumes that rich collective

resources (material and social resources, such as services, job opportunities, and social support) positively influence people's health outcomes and the beneficial effects are even higher for poorer individuals. The second model, that of local social inequality employs an underlying assumption of social comparison as it is considered that the disparity between an individual's own socioeconomic position and the socioeconomic position of those living nearby affects health. Using three health outcomes (depression, general self-rated health and an objective measure of health of high waist/hip ratio), the authors tested empirically their models and found evidence in favour of the collective resources model. Living in a deprived neighbourhood proved to have the most negative health effects on poorer individuals who increasingly depend on local available resources in comparison to the more affluent. No strong evidence was uncovered in favour of the second model.

The issue of social inequalities in mental health has also been addressed in the UK (Macintyre, Maciver and Sooman, 1993) by considering the collective resources model and the local social inequality model proposed by elsewhere (Riva et al, 2010). Results showed that, although rural context has a direct and positive influence on mental health, inequalities in mental health associated with being in the workforce are more important in rural communities than in urban settings. Their findings extend other research conducted in the UK reporting worse mental health outcomes in deprived localities, but only for economically inactive individuals. Residency is therefore also liable to lead to inequalities, and this question needs further examination in various contexts, as claimed by some scholars (Babones, 2008; Macintyre et al., 1993; Riva et al, 2010).

In view of the prior findings and tacking into account the specificity of geographical context examined here, this paper sets out to explore inequalities in self-rated health status in Romania in comparison to ten NMS and EU15. The paper analyses the role of individual and contextual factors in determining self-rated health status and patterning health inequalities. Inequalities in health status will be understood as systematic differences in self-rated health between people having various socio-demographic characteristics and living in various types of communities, similarly to an influential definition in the literature (Mackenbach et al, 2008) that best suits the specificity of our analysis. Through this study we also aim to extend the knowledge on health inequalities by including other factors in addition to income, which gained the attention of many researchers (Chappell and Funk, 2010; Deaton, 2003; Furnée, Groot and Pfann, 2011; Jankovic, Snenazana and Marinkovic, 2009; Mantzavinis, Trikalinos, Dimoliatis and Ioannidis, 2006; Pop, van Ingen and van Oorschot, 2012; Pritchett and Summers, 1996). We expect, for instance, to find important differences in the role played by gender in the structuration of inequalities between Romania and the two clusters of European countries considered. Gender has increasingly caught the attention of scholars also in the field of health inequalities either at the level of a single country

(Furnée et al., 2011) (Regidor et al., 2010) or across countries (Kobayashi and Prus, 2012) and even among immigrants (O'Campo et al., 1995).

Methods

Individual data coming from European Quality of Life Survey (EQLS) second wave of 2007 will be analysed in this paper. EQLS posits the advantage that includes all EU countries, each of them having representative samples of the general populations. The survey is dedicated to all major domains of quality of life, including health. A series of indicators measure various aspects related to health: self-rated health, mental health, access to health services, satisfaction with health, long standing illness or disability, perception on constraints posed by long lasting illness or disability, rating of health services in country. The integrated dataset also contains a wide range of indicators for describing socio-economic status. The strength of EQLS consists in the opportunity it gives for carrying out comparisons across countries and groups of countries.

For the present analysis we used the pooled data for Romania, 10 New Member States and EU15. Romania is compared to the ten New Member States and older member of EU, the 15 more developed countries in Europe. A study sample including total number of 27494 respondents was included in the analysis.

The dependent variable we use is self-rated health measured in the survey on a five point scale: 1. Very good, 2. Good, 3. Fair, 4. Bad, 5. Very bad. The variable was recoded as dummy variable with code 1 containing the answers fair, bad and very bad. A similar coding was used by other scholars (Wilkinson, 2005) in this field. Independent variables have been grouped in two categories: individual and contextual factors.

Independent – individual. In the literature, individual measures, depending on the study, include sex, age, ethnic group, access to car, employment status, social class, income, marital status, prenatal care, smoking, alcohol use, etc. Our study includes age, gender, perceived sufficiency of household income for making ends meet, education, employment status, household size, and material support received in past 12 months. They are described below. Age (18+) and household size are treated as continuous. All the others are used as dummy variables, code 1 being assigned to: female, thinking that household's total monthly income is able to make ends meet with some difficulty / difficulty / great difficulty, inactive employment status (unemployed, unable to work, home maker, retired, in school or other), and receiving in the past year regular help from a person not living in the household in the form of either money or food. For education we created three dummy variables, following ISCED levels: low education (ISCED 0-2), medium education (ISCED 3), and high education (ISCED 4-6).

Independent – contextual factors. In the literature (Stafford and Marmot, 2003), contextual factors characteristics include a wide range of various indicators like: the availability and accessibility of health services; infrastructure deprivation (lack of parks, stores selling healthy foods at affordable prices, etc.); the prevalence of attitudes towards health and health related behaviour; stress and lack of social support (Babones, 2008), rurality and employment deprivation (Macintyre et al., 1993), home ownership, number of community groups, unemployment, housing violations, crime rate, wealth and income.

Our study includes living in a rural/urban area, perceived quality of health services, and perceived environmental quality of neighbourhood. They are described below. Rural was defined according to the EQLS practice as open country side, village or small town and urban was defined as medium/large town or city/ suburb. We use a dummy variable, code 1 being assigned to living in a rural area. The evaluation of quality of health services was measured with a scale from 1 (very poor quality) to 10 (very high quality). We treated it as continuous. The scale was reversed, so that 1 means very good quality and 10 means very poor quality. Four different items have been included for environmental quality of neighbourhood: noise, air pollution, lack of access to recreational or green areas and quality of tap water. The items have been measured by asking people if they have very many reasons, many reasons, a few reasons, or no reason at all to complain about each of the problems. We recoded them in dummy variables, code 1 being assigned to having very many reasons and many to complain.

Results

The results of the statistical analysis consisting of binary logistic regression in the program SPSS, version 20, are presented below. For Romania the analysis was carried on 908 valid cases, while for the NMS 10 and EU15 the effective sample size encompass 9927 and respectively 16665 individuals. For each of these samples we conducted one binary logistic regression model that included simultaneously individual and contextual factors. The nonresponses were treated listwise. For this reason there was a loss of valid cases between 5 per cent, in the EU pooled sample, and 9 per cent in the other two. Table 1 summarizes the results of the logistic regressions. We present also the odds ratio given their facile interpretation.

Table 1. *Odds ratios for predictors of self-rated health in RO, NMS 10 and EU15*

	RO			NMS 10			EU 15		
	B		**Exp(B)**	**B**		**Exp(B)**	**B**		**Exp(B)**
Age (18+)	0,05	**	1,05	0,06	**	1,06	0,04	**	1,04
Female	0,51	**	1,66	0,05		1,05	0,12	**	1,12
Low education (isced 0-2)	0,69	**	2,00	0,20	*	1,22	0,23	**	1,26
Medium education (isced 3)	0,86	**	2,36	-0,04		0,96	0,04		1,04
Household income able to make ends meet… with some difficulty, with difficulty or with great difficulty	0,56	**	1,76	0,82	**	2,27	0,64	**	1,90
Employment status (inactive)	0,50	**	1,65	0,47	**	1,60	0,46	**	1,59
Household size (1 to 10+)	0,03		1,03	-0,06	**	0,94	-0,07	**	0,94
In the past year, household received help	0,42	*	1,53	0,24	**	1,28	0,35	**	1,43
Rural	0,01		1,01	0,15	**	1,16	0,00		1,00
Health services evaluation (1 to 10, very high quality to very poor quality)	0,09	**	1,09	0,06	**	1,06	0,10	**	1,11
Noise, very many or many reasons to complain	0,29		1,33	0,20	**	1,22	0,32	**	1,38
Air pollution, very many or many reasons to complain	-0,18		0,84	-0,01		0,99	-0,03		0,97
Lack of access to recreational or green area, very many or many reasons to complain	0,24		1,28	0,17	*	1,18	-0,07		0,93
Quality of tap water, very many or many reasons to complain	0,21		1,23	0,03		1,03	-0,01		0,99
Constant	-4,64	**	0,01	-4,18	**	0,02	-3,72	**	0,02
n	902			9927			16665		
Increase in correct classification	between 0 and 19%			between 0 and 18%			between 0 and 5%		
p χ² (Hosmer & Lemeshow test)	0,11			0,00			0,00		
R² (Cox & Snell)	24%			28%			15%		
R² (Nagelkerke)	32%			37%			22%		

Dependent variable: subjective health, 1 = fair, bad or very bad; 0 = good or very good

Reference category: for gender: male; for education: ISCED 4 + 5 + 6; for capability of making ends meet: very easily, easily or fairly easily; for receiving help: no; for rural: urban; for noise / air pollution / lack of access / quality of tap water: a few or no reason at all to complain.

* $p < 0.05$, ** $p < 0.01$

The Exp(B) is the odds ratio associated with each predictor. We expect predictors which increase the logit to display Exp(B) greater than 1.0, those predictors which do not have an effect on the logit will display an Exp(B) of 1.0 and predictors which decrease the logit will have Exp(B) values less than 1.0. For example, in RO, the odds of rating fair, bad or very bad personal health is 0.66 higher for female than for male.

Discussion

In Romania individual factors seem to have an important role in self-rated health. There were significant inequalities by socio-demographic factors. Age contributes to a more negative self perceived health status. Women are more likely to report a negative health state, while both low and average education (ISCED 0-3) determine a low self-rated health. Moreover, not being in employment is also associated with higher odds of reporting poor health. Insufficient income (household income able to make ends meet only with difficulty) and receiving material support during the past year was significantly associated with negative health status. This suggests that individuals from households in need, despite having some material support, have higher odds of reporting a negative health status.

The role of individual factors in determining self-rated health is strong also in the analysed new member states and the older member states of EU. This seems to be a universal pattern. In NMS10, being a female and having an average level education do not bear any significant influence on self-rated health, while in EU15 average education is not a significant factor in reporting poor health. These are the only lines along which Romania differentiates itself from the new member states and EU15 in what regards the role of individual factors.

Overall, we can say that more pronounced inequalities are to be found in Romania in what regards sex and education in comparison to the two analysed groups of countries. Inequalities in health by education are thoroughly analysed in the international literature (see, for instance, Ross and Wu, 1995).

The role of contextual factors seems less straightforward in determining self-reported health in comparison to that of the individual factors. It is however known that Romania is confronted with inequitable access to health resources. As

highlighted by Frunză (2011), the use of these health care resources is often arbitrary and not directed towards those categories of people in need. It follows then that in Romania, negative health services evaluation is significantly associated with reporting poor health. Environmental factors do not seem important in determining self-rated health. A more coherent pattern of contextual factors is displayed by NMS10. Here, rural contributes to a more negative health status while environmental factors like noise and lack of access to recreational or green area bear a significant influence on self-rated health. In EU15 the evaluation of health services is also significant in determining self-rated health, while across the range of contextual factors included in the analysis, only reasons to complain about noise contribute to a more negative self-rated health. Evaluation of health services is a crucial factor in Romania and the two analysed groups of countries in self-rated health while the role of environmental factors varies across the units of analysis.

The present study brings interesting results about how Romania, as a member of EU since 2007, situates itself by comparison to other clusters of European countries, with respect to pattern of inequalities in health. It therefore elucidates the role of individual and contextual factors contributing to these differentiations in health inequalities. However we point to the fact that lately multilevel analysis gained more prominence in analysis when investigating community level characteristics. In this article, we considered that regression models answered appropriately our purposes as variables used have been measured at individual level. Multilevel analysis would have given the opportunity to include a wider range of contextual factors like development region, for example, which would widen the scope of such analyses in the future.

The comparison was carried out between Romania, ten New Member States and EU15. We preferred to compare Romania only to ten new member states instead of existing eleven for reasons of country grouping in the integrated dataset and the consequent weighting procedures applied to data. Future studies should include the country of Bulgaria, in order to have a complete image over all new member states.

To sum up, this research has some innovative findings: (1) a comparative analysis of individual and contextual factors determining differences in patterns of inequalities in health between Romania, NMS and EU15 has not been addressed in the literature; (2) in regard to individual factors, Romania, which joined EU in 2007, shares the model of NMS10 and EU15 especially with concern to the impact of education, gender, age, employment status and income on self-reported health; (3) in regard to contextual factors, the evaluation of health services is critical in differentiating between Romania and the two analysed groups of countries with respect to self-rated health, while the role of environmental factors varies across the units of analysis; (4) in Romania the health policy should take into consideration and address the existing inequalities by socio-demographic

factors; (5) even though more studies are needed to understand the role contextual factors in determining inequalities, they should also be in the attention of health policy.

Acknowledgements

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