



**Extended abstract**

## **EXTENDED ABSTRACT**

**Title: Social displacement and multiple chronic diseases among European older adults: a macro-regional analysis**

**Authors and e-mail of all: David Cantarero Prieto (david.cantarero@unican.es); Marta Pascual Sáez (marta.pascual@unican.es) and Carla Blázquez Fernández (carla.blazquez@unican.es)**

**Department: Economics**

**University: Universidad de Cantabria**

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**Abstract: (minimum 1500 words)**

In accordance with the World Health Organization (1986) “health is a state of complete physical, mental and social well-being and not merely the absence of disease”. Furthermore, in a profuse understanding to health it should be highlighted that it is related with physical, social and economic circumstances (House et al., 1988; Marmot 2005; Tapia-Granados and Ionides, 2017). Besides, as advanced by Lago et al. (2018) the published literature on socioeconomic status, health and non-communicable diseases (NCDs) is characterized by many papers postulating the complexity of those relationships. Correspondingly, it advocates that further research is necessary regarding those different factors related with health status, particularly, on NCDs (Stringhini et al., 2017).

Chronic diseases are characterized by long duration, and usually, slow progression. NCDs cause more deaths than all other causes combine. Indeed, NCD deaths are estimated to increase from 38 million in 2012 to 52 million by 2030 (Mendis, 2014). Among the leading risk factors for NCDs, in general, are high blood pressure, tobacco use, high blood glucose, physical inactivity, obesity, high cholesterol, and alcohol use. However, latent to these behaviour-related factors, are also the social and economic environments as poverty, inequality or social displacement (Diem et al., 2016). Among the aforesaid factors, in this manuscript, we would focus on social isolation (referring therefore to the contacts with individuals of the respondent’s network, and not taking so the subjective feeling of loneliness from individuals). At this regard, it should be mentioned that there is a vast amount of research on social isolation and health. The social isolation have been associated with mortality and morbidity, see for example UK Biobank Studies in Lancet Public Health (2017) and in Heart (Hakulinen et al., 2018), and a recent review by Holt-Lunstad (2018) that discuss the current literature with a broader perspective. That is, social isolation would have social and health implications (Shankar et al., 2017; Rico-Urbe et al., 2018). At this regard, although individual



socioeconomic status has been linked with chronic diseases (Allen, 2017), there has been relatively little research into the question of how social isolation may affect multimorbidity (Olaya, 2017; Lamu and Olsen 2018; Smith and Victor, 2018; Steptoe et al., 2018). More research is so needed to better understand social isolation and multiple chronic diseases.

Our objective is to study if there is an increase in the propensity of being diagnosed with chronic illnesses because of social displacement after age 50. Social isolation becomes an important risk at older ages because several events occur at the same time: decrease in economic resources, mobility impairment and death of contemporaries, among others (Steptoe et al., 2013). For this purpose, we have considered a panel data for a set of European countries and have used logistic regressions. In addition, we have extended the results for the full sample by considering three geographic macro-areas (Nordic, Continental and Southern; which correspond to Welfare Regimes). The hypotheses here postulated are: a) the three objective aspects considered as proxies of social isolation will be associated with chronic diseases after age 50; b) socio-demographic variables would also matter on multiple chronic diseases; c) due to the divergences in both social networks and welfare regimes, the association between the variables included and multiple chronic diseases will be somehow different across the geographic macro-areas considered in this analysis. In doing so, we transmit a distinction on previous contributions and we provide new highlights for chronic prevention in European countries. The main manuscript strengths are: the sample size, the 5-waves follow-up, and the multi-country analyses. These strengths would provide enriched information in order to understand better the different relationships.

The data have been obtained from the Survey on Health, Ageing and Retirement in Europe (SHARE), Waves 1 to 6 (2004-2015). Our sample is restricted to population aged  $\geq 50$  ( $n = 282,297$ ). We have considered the age 50+ as it is the starting point of the SHARE, and so, we had a larger sample available to work with. Besides, four levels: 50-59 years, 60-69 years, 70-79 years and  $\geq 80$  years have been contemplated in estimates to determine if there exist any differences. Besides, as we have excluded individuals who did not respond in consecutive SHARE Waves (those lost overfollow-up data  $n = 244,430$ ), our analytical sample is composed of 37,864 individuals. Moreover, as number of chronic diseases is not asked in Wave 3, final sample (9 countries) in estimates would be based on of 31,536 observations distributed as follows by macro-areas: 6,843; 16,627 and 8,066 observations for Nordic, Continental and Southern, respectively.

All variables used in estimates are at the individual level and cover the entire relevant aspects. On the one hand, as dependent variable, we consider *Chronic* that is a binary one. It takes value 1 if the person is diagnosed with three or more chronic diseases and zero otherwise. That is, while it may not be surprising that more and more Europeans have a chronic condition, what is striking is the increasing number of people that have multiple chronic conditions (MCCs). On the other hand, as control variables, we explore both *social isolation measures* and *socio-demographic variables* (using for all dummy variables). *Social isolation measures*: information is covered through three social isolation proxies. *Alone* that takes value 1 if respondent lives alone, as marital behaviour and living arrangements are clearly correlated, we would not use any socio-demographic variables related with marital status or partnership; *Help* which would take value 1 if among the activities of the individual during the last month it is included



providing help to family, friends or neighbours; and *Club* codified as 1 when the activities for individuals in last month include going to sport, social or other clubs. *Socio-demographic variables*: other control variables related to well-being, 1 if low quality of life (QoL). QoL is a commonly used measure for well-being, CASP-12 in SHARE data. It is based on four subscales on control, autonomy, pleasure and self-realization. It ranges between 12 and 48 and it is interpreted as follows: low QoL, <35; moderate, 35–37; high, 37–39; and very high,  $\geq 39$ . Because multicollinearity problems could appear in estimates, other health variables, in spite of being available in the survey (such as self-assessed health) are excluded in our final model. Furthermore, gender (1 if female); age (four levels: 50-59 years, 60-69 years, 70-79 years and  $\geq 80$  years); educational level (measured according to international classification ISCED-97: low, middle and high education); employment status (unemployed, employed, retired and disabled; given the nature of the sample, individuals aged  $\geq 50$  there are not enough observations to disentangle by term of job) and geographic characteristics (*Rural* is 1 if the person lives in a rural area or not) are considered.

Concerning results for the full-sample, statistically significant effects are obtained for all social isolation proxies. Consequently, the 1.20 odds ratio means that MCCs odds after age 50 are 20% higher for living alone people. However, people who provide help to relatives, friends and/or neighbours have a lesser probability of suffering from MCCs (OR = 0.84, 95% CI 0.68, 1.04). But this proxy, as is statistical significant at 10%, should be used and interpreted with caution. The same applies for those that participate in activities related to clubs (OR = 0.70, 95% CI 0.54, 0.92). As for socio-demographic variables, suffering MCCs increases with low well-being, the higher the age and being disabled (95% C.I.: 1.46 to 13.74). Besides, the reverse effect is shown for those with high education and being employed (95% C.I.: 0.24 to 0.97). Nonetheless, the gender and rural variables are not significant.

Concomitantly, turning to macro-areas OR results, our findings somehow presents changes with the aforementioned ones, mainly related with the significance of variables and not with constantly direction. Formerly, whereas living alone (OR = 1.37, 95% CI 0.97, 1.93) and help (OR = 0.58, 95% CI 0.34, 0.97) isolation proxies would matter for the Nordic macro-area, the latest is only significant at 10%, and so, must be interpreted with carefulness; the club-participation and living alone ones, are significant for Continental and Southern macro-areas, respectively (OR = 0.65, 95% CI 0.55, 0.82; OR = 1.46, 95% CI 1.21, 1.77). Besides, it is worth noting that the educational factor does not matter for Southern ones. Moreover, results are just about unchanging between geographic macro-areas when considering low well-being, age and employment status. Again, factors associated with rurality are not statistically significant.

From the presentation above, and in spite of the fact that different socio-demographic variables would matter on the propensity of being diagnosed with chronic illnesses, it should be clear up that elderly Europeans with lesser social isolation would have lower risk of suffering from MCCs. Social isolation and loneliness are intrinsically related but somehow distinct concepts that should be in all cases considered (Grenade and Boldy, 2008). Indeed, our empirical findings confirmed these issues related with social isolation should be contemplated in the development of new public policies. Hence, the preceding literature had identified two main types of interventions: group-based interventions and one-to-one interventions (Landeiro et al., 2017). But they can be established both in community centres and at patients' home, and should focus on social



skins (e.g. educational courses on social behaviours), social support (e.g. volunteer programs) and/or social interaction (e.g. providing services like transportation or internet use). Taking advantage of the opportunities that come with these factors, would determine the success of Welfare States.

**Keywords:** *Social isolation; chronic disease; Europe; SHARE study; panel; macro-regional analysis*

**JEL codes:** **I10; I31.**

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