Gender Inequalities in Health in Later Life: The Role of Spousal Caregiving

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Abstract

This study investigates the influence of spousal care transitions on the health of older men and women living in 17 European countries. We use five waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) between the years 2004-2015 for a total of 96,356 observations. Health is defined as a Frailty Index calculated from 40 items. Caregiving is defined as help with personal care provided to partners and spouses. Results from asymmetric fixed-effects linear regression models show that the transitions into caregiving have a detrimental effect on health, with gender and geographical variation. On the contrary, the transitions out of caregiving have no beneficial effect on health. This suggests that the impact of caregiving is somewhat permanent and has lasting effects for the caregiver. This highlights the asymmetric nature of care transitions and the need to account for care trajectories when assessing the impact and consequences of caregiving.

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1. Introduction

In Europe, the increased life expectancy is leading to a rise in the number of older adults in need of long-term care (Agree and Glaser, 2009). With some geographical variations (Suanet, Broese van Groenou and Van Tilburg, 2012), most part of informal care is provided by families (Agree and Glaser, 2009; Genet *et al.*, 2013; Verbakel *et al.*, 2017) and, within families, informal care responsibilities are often uniquely shouldered by women (Pinquart and Sörensen, 2006, 2011; Yee and Schulz, 2000). The proportion of men assuming roles as caregivers is steadily increasing (Sharma, Chakrabarti and Grover, 2016). Yet, when considering ageing populations, older women are more likely than men to care for their ill spouses or partners (Calasanti, 2010; Pinquart and Sörensen, 2006, 2011) and women mostly act as solo caregivers (Bertogg and Strauss, 2018).

   This disproportionate toll of care responsibilities on women has many implications, precisely because caregiving can be a burdensome experience (Pinquart and Sörensen, 2003; Zarit, Reever and Bach-Peterson, 1980) for the reason that it is assumed to translate into poor physical and mental health conditions along the "stress process" (Pearlin *et al.*, 1990). This is especially true for spousal caregivers (Pinquart and Sörensen, 2003), since entering this role is unique in that the "social and marital partner is now compromised" (Seltzer and Li, 2000, p. 175). Moreover, spousal caregiving is generally intensive (Hirst, 2005; Pinquart and Sörensen, 2011). In addition, many informal caregivers do not have a choice in taking on the caregiving role. This lack of choice is associated with higher levels of emotional stress, physical strain, and negative health impacts (Schulz *et al.*, 2012), especially when the public long term care supply is scarce (Wagner and Brandt, 2017). As Pearlin (2010, p. 210) suggests, "becoming a caregiver is not a normatively expected transition and, therefore, is not preceded by systematic preparation". Similarly, Pearlin and colleagues (Aneshensel *et al.*, 1995; Pearlin and Aneshensel, 1994) clarified that, unlike most careers, caregiving is unplanned and often unexpected. This ambiguity has been shown to be more characteristic for spousal caregivers than for other types of caregivers (Montgomery and Kosloski, 1994).

   Spousal caregiving controls for type of relationship between caregiver and care receiver (Calasanti, 2010). This might provide a unique opportunity to investigate how gender shapes the impact of care responsibilities on health in later life. However, while caregiving research is abundant, it tends to ignore the role of the transitions into and out of caregiving in influencing older men and women's health outcomes. In other words, prior studies have not been interested in the distinction between the effects of transitioning versus providing care in general (Dunkle

et al., 2014). Instead they were mainly focused on the comparison between non-caregivers and (new) caregivers.

Moreover, only few studies have investigated the health consequences of stopping caregiving for a spouse who is still alive and continues to live in the community (Dunkle *et al.*, 2014). The choice to provide care is constrained by policy and societal changes (Broese van Groenou and De Boer, 2016). Still, with very few exceptions (e.g. Wagner and Brandt, 2017), there is a limited body of cross-national research on spousal caregivers' well-being and, to our knowledge, no comparative analyses focused on gender differences in health at older ages.

The aim of this study is to contribute to existing literature on gender inequalities in health in later life essentially in two ways: first, by analysing how the transitions into and out of the role of spousal caregiving influences personal health; and second, by analysing the role of the broader institutional context of various welfare state regimes. The institutional context in which women and men live might mitigate the detrimental effects of informal caregiving on health, due to differences in the provision of formal care and differences in the specific interactions between the state, the market, and the family in the provision of welfare to the individuals. The following research questions will be addressed: (*a*) Does the impact of the transition into and out of caregiving on health in later life differ between women and men? (*b*) If so, does the specific welfare state arrangement play a role?

2.   Spousal caregiving, gender, and health in context: theoretical framework, empirical evidence, and hypotheses

2.1. Spousal care transitions and associations with health

Caregiving can be conceptualized as a career (Pearlin, 1992). During the period of family caregiving, the demands of the role can change, even within each stage of the caregiving career (e.g. during residential caregiving activities) (Pearlin, 1992, p. 647). Consequently, the impact of the spousal care transitions on the health of the caregiver are not static.

Longitudinal studies show that rates of distress vary at different stages in a caring relationship (Aneshensel *et al.*, 1995; Cannuscio *et al.*, 2002; Hirst, 2005; Seltzer and Li, 2000). On one hand, transitions *into* caregiving are frequently associated with increased distress (Hirst, 2005) and depressive symptoms (Kaufman *et al.*, 2018), although not all studies have found a significant association (Seltzer and Li, 2000). Prior research about transitions *out of* caregiving typically focuses on those whose care recipient died or moved into a long-term care facility. Among these studies, there is evidence suggesting that stopping care because of the partner's death (Cannuscio *et al.*, 2002; Haley *et al.*, 2008; Li, 2005; Schulz *et al.*, 2003) or

institutionalisation (Gaugler *et al.*, 2010) is associated with improvements in mental health and well-being. These studies suggest that stopping caregiving provides relief rather than posing health risks for family caregivers. Other studies have found that distress increases after caregiving ends (Hirst, 2005; Liu and Lou, 2017).

The above considerations result in the following hypotheses regarding spousal care transitions and their associations with health:

H1: Transitioning into spousal caregiving activity is associated with poorer health.

H2: Transitioning out of spousal caregiving activity is associated with better health.

2.2. Gender and spousal caregiving transitions

Gender seems to modify the association between caregiving and health. The predominance of evidence from prior literature on caregiving has consistently shown that women appear to be more vulnerable to the negative consequences of caregiving than men (Mc Donnell and Ryan, 2013; Pinquart and Sörensen, 2006, 2011; Yee and Schulz, 2000).

According to one line of reasoning, based on the stress-and-coping models of caregiving (Pearlin *et al.*, 1990), women and men live in different structural contexts in which the unequal distributions of opportunities, constraints, rewards, privileges, and responsibilities can lead to different types and intensities of stressors to which individuals are exposed. Hence, more stressors and fewer social resources for female caregivers are suggested to result in lower levels of psychological and physical health in female than in male caregivers.

A second line of reasoning argues that the meaning of caregiving, the approach to care work, the stress that arises from care responsibilities, the coping strategies, and the social rewards of caregiving are different for men and women (Calasanti and King, 2007; Calasanti, 2010; Gilligan, 1982; Mc Donnell and Ryan, 2013). According to this framework, traditional gender roles may orient caregivers' expectations of themselves and the way the care activities should be performed (Calasanti and King, 2007; Gilligan, 1982; Hong and Coogle, 2016). This suggest that men mainly adopt a task-oriented approach to caregiving (Mc Donnell and Ryan, 2013) because they see care responsibilities as "tasks to master and problems to solve" (Calasanti, 2010, p. 726). This orientation might provide greater feelings of control and self-efficacy (Calasanti, 2010) and lead men to be more successful in separating their emotions from the "tasks at hand" (Calasanti and King, 2007, p. 523; Calasanti, 2010; Mc Donnell and Ryan, 2013). At the same time, they might receive more social support than women (Mc Donnell and Ryan, 2013) and more praise for their efforts that transcend the typical masculine role (Calasanti and King, 2007). In contrast, women might generally be confronted with high

expectations – by themselves and by others – about their care responsibilities and may feel more responsible and obliged to care (Calasanti, 2010; Hong and Coogle, 2016). This might expose them to view it as their responsibilities to meet all of their spouse's needs – a potentially impossible goal – and introduce shortcomings in their expected role as a nurturers, creating greater potential for stress than husbands may experience (Calasanti and King, 2007; Calasanti, 2010). Thus, the health effects of caregiving might generally be stronger for women than for men.

Guided by prior theoretical and empirical literature, we evaluated the following hypotheses:

H3: Transitioning into spousal caregiving activity has a stronger detrimental impact on health for women than for men.

H4: Transitioning out of spousal caregiving activity has a stronger beneficial impact on health for women than for men.

2.3. Welfare state and informal caregiving

The context in which individuals are embedded influences the health outcomes of older caregiver women and men. The caregiver burden not only varies at different stages in a caring relationship but is also associated to with country-level differences in norms and economic approaches to care. For example, the health consequences of informal care vary cross-nationally according to the availability of formal care options (e.g. long-term care), the public old age and family transfers, or the attitudes toward coresidential familial caregiving (Kaschowitz and Brandt, 2017; Pearlin *et al.*, 1990; Ruppanner and Bostean, 2014; Wagner and Brandt, 2017). In other words, the caregiving experiences are situated in specific socioeconomic contexts, which can directly (e.g. through health-related formal programs) and indirectly (e.g. through the relative importance of informal care and the caregiving responsibility) influence the health conditions of caregivers.

A central aspect of welfare state regime theory is related to countries' approaches to the care of dependent individuals (Esping-Andersen, 1990). For example, the care load encountered by informal caregivers of frail older adults might be supported by the welfare state through financing and support schemes (Bettio and Plantenga, 2004). However, even the more extensive welfare states of Northern Europe show a strong reliance on informal care supplied by family members (Brandt, Haberkern and Szydlik, 2009). There are two main hypotheses regarding the "division of transfers" between the state and the family (Kaschowitz and Brandt, 2017): the "complementarity hypothesis" states that public and private support are complementary; the "substitution hypothesis" postulates that these types of support can

substitute each other (Kohli, 1999; Künemund and Rein, 1999). Complementarity, or a specific division of labour in terms of "specialization" (Brandt, 2013, p. 46) is expected to be more prevalent in generous welfare states, where "[f]amily members are […] enabled to give additional support to their relatives if, when and in which form they like to". Therefore, in these institutional contexts, women and men might support their relatives with (low intensity) "help" instead of (intensive) care (Verbakel *et al.*, 2017). This pattern might be reversed in less generous welfare states in which women are compelled to supply more intense forms of support, like spousal caregiving, and "just" help is less likely (Bonsang, 2007; Brandt, 2013). In other words, in countries in which the availability of formal care is more consistent (such as in Denmark, Netherlands, or Sweden), the negative effects of caregiving may be reduced because professional services can influence the perceived burden of care and also the stressors that are directly related to the care characteristics (e.g. the specific stage of the caregiving experience). The availability of formal care in such "service-based" countries (Kaschowitz and Brandt, 2017) can affect stressors that arise from the burdens due to fulfilling multiple social roles beyond being a caregiver (e.g. that of a partner, a parent, or an employee). On the contrary, in the more familistic countries (such as in the Southern and Eastern European) with stronger kinship ties, where economic uncertainty is higher, the availability of formal support for caregivers strongly limited, and in which women are primary caregivers, the provision of spousal caregiving might exert a bigger toll on women's life at older ages.

All in all, formal care options help reducing intrapsychic strain which leads to stress and ultimately to negative mental and physical health outcomes (Pearlin *et al.*, 1990). Consequently, we would expect a smaller gap in health, between those who enter into caregiving and those who do not, in those welfare arrangements in which the availability of formal care is more consistent and a larger gap in health in familistic ones.

Following the epidemiological literature, it is possible to group the European countries under analysis in this study in four welfare clusters: *Western* (Austria, Belgium, France, Germany, Luxembourg, and Switzerland), *Southern* (Greece, Italy, Portugal, and Spain), *Northern* (Denmark, Netherlands, and Sweden); and *Eastern* (Czech Republic, Estonia, Poland, and Slovenia) (Bambra, 2007; Ferrera, 1996). These four generic welfare clusters are consistent with various social theories on cultural roots and attitudes toward caregiving and represent different geographical regions and welfare state regimes.

Considering the above literature, we propose the following hypothesis:

H5: We expect a stronger effect of caregiving transitions on health in family-based countries (Greece, Italy, Portugal, and Spain) compared to *Western* (Austria, Belgium, France, Germany,

Luxembourg, and Switzerland), *Northern* (Denmark, Netherlands, and Sweden), and *Eastern* (Czech Republic, Estonia, Poland, and Slovenia) European countries due to higher responsibilities and exertion in these countries.

3. Data and Methods

3.1. Data

We use panel data from the Survey of Health, Ageing and Retirement in Europe (SHARE) (Börsch-Supan *et al.*, 2013). SHARE is a multidisciplinary and cross-national panel dataset of micro data on health, socioeconomic status, and social and family relations of older Europeans. Empirical analyses have been conducted with 36,081 individuals (96,356 observations) of age 50 and older in the first (2004-2005), second (2006-2007), fourth (2011-2012), fifth (2013), and sixth (2015) wave of SHARE. The retrospective third wave of SHARE (SHARELIFE), carried out in 2008–2009, was excluded from the analyses as it focuses only on the respondents' life histories and because the questionnaire and variables are very different from the core data. The analytic sample included participants living in one of the 17 countries that contributed to at least two waves of the longitudinal sample (Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Greece, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, and Switzerland).

Since we focused on the influence of the transitions into and out of spousal caregiving on potential caregiver's health *changes*, we restricted our sample to those who (1) participated in the SHARE survey in at least two waves, (2) had a spouse or partner who also participated in the SHARE survey during the same period, (3) were married or partnered to the same person throughout the observation window, (4) lived in the community with their spouses at all the waves, and (5) met the original SHARE sample criteria (i.e., 50 years of age or older). We dropped respondents in same-sex couples (N=120) as both would appear in the same model (i.e., as both husbands or both wives).

3.2 Dependent variable

For the dependent variable, we use a 40-item Frailty Index (FI) of accumulated deficits, constructed in accordance with standard procedures (Romero-Ortuno and Kenny, 2012; Searle *et al.*, 2008). Frailty is considered a comprehensive concept and measure of health at older ages and it is highly predictive of subsequent adverse health outcomes (Fried *et al.*, 2001; Romero-Ortuno and Kenny, 2012). Current deficits used to construct the dependent variable are measured at each wave of SHARE and include an objective health marker (grip strength),

weight loss (body mass index deficit), functional impairments in personal and instrumental activities of daily living, self-reported health and comorbidities, mood (sadness or depression, lack of enjoyment, etc.), limitations in cognition (impaired orientation to date: day, month, year, day of the week), and other measures. Each individual's deficit points were summed and divided by the total number of deficits evaluated (in our case 40) and then multiplied by 100 to obtain a FI with a theoretical range from 0 (no deficits present) to 100 (all deficits present). For example, a respondent with five deficits would have a FI value of 12.5 (5/40*100). Higher values indicate a greater number of health problems and hence greater frailty. The reliability coefficient, Cronbach's alpha, for the 40 items, is 0.87, which is commonly considered adequate to sum the items to a scale. Missing values for each item were negligible: except for grip strength (8.58% of missing), all items showed less than 4% missing values.

3.3. Independent variables

Gender and spousal care are the key independent variables. SHARE uses the following item to measure informal care inside the household: "*Is there someone living in this household whom you have helped regularly during the last twelve months with personal care, such as washing, getting out of bed, or dressing?*" If the respondent answered in the affirmative, a follow-up question was asked about the relationship between the caregiver and the care receiver. Partners and spouses were coded as 1. Hence, the value 0 indicates "no spousal care," and the value 1 indicates "spousal care" (X_{it}).

Prior research suggested that transitions into and out of spousal caregiving are particularly important in terms of health. Therefore, following the procedure described by Allison (2018) we introduced two dynamic counter variables of spousal care that increases with each additional transition *into* care (Z_{it}^{+}) and with each additional transition *out of* care (Z_{it}^{-}) over the 12-year follow-up period. This operationalization of spousal care enabled us to disentangle the unbiased effect of the transitions *into* and *out of* spousal care in the fixed-effects models (Allison, 2018). In order words, it permits to assess whether the independent variable (spousal care) has a different magnitude of effect on health when the respondents experience a transition into caregiving and out of caregiving. Applying the original spousal care dummy variable (X_{it}) would lead to a biased estimation of an asymmetrical spousal care effect. The drawback of this operationalization is that respondents who did not experience spousal care transitions at all (i.e. individuals who did not provide spousal care in any of the five periods and those who provided

spousal care in all five waves) will always appear with the value 0 in both variables Z_{it}^{+} and Z_{it}^{-}.

3.4. Potentially confounding factors

We controlled for a number of respondent, spouse, and couple-related factors that were likely to be related to both the provision of care and to the health outcomes (Pearlin *et al.*, 1990): age of the respondent (range 50-98), current job situation of the respondent (retired, employed or self-employed, non-employed), household income and wealth quartiles (country and wave-specific), and SHARE wave. Moreover, partner's limitations with activities of daily living (ADL) were included as a condition to acknowledge what Walker, Pratt and Eddy (1995) call the "criterion of dependence", i.e. the notion that assistance can only be labelled care as opposed to aid when the recipient is unable to autonomously perform the everyday task for which support is received. This implies that partners can only receive informal care when they have functional limitations. The latter variable has two categories: partner without limitations in ADL, and partner with limitations in ADL.

Since we analysed unbalanced panel data (i.e. the number of waves as well as the time between waves vary across individuals and countries), we controlled for the number of months that respondents spent in the observation window from the date of the last interview (variable "treatment months"). This variable served to control for the length of the time between waves.

3.5. Statistical methods

We used standard fixed-effects linear regression models (Allison, 2009) in order to estimate the impact of spousal caregiving on health.

In order to examine the longitudinal (asymmetric) associations between caregiving transitions and health, we adopt a novel approach based on fixed-effects regression models. Following the procedure described by Allison (2018), we estimate an asymmetric fixed-effects model in which we observe Y_{it} (the health outcome) and X_{it} (the original spousal care dummy variable) for time $t = 1, \dots, 5$. In a first step, we decompose the difference scores of the original spousal care dummy variable into a positive and a negative component:

$$X_{it}^{+} = X_{it} - X_{it-1} \text{ if } (X_{it} - X_{it-1}) > 0, \text{ otherwise } 0$$
$$X_{it}^{-} = -(X_{it} - X_{it-1}) \text{ if } (X_{it} - X_{it-1}) < 0, \text{ otherwise } 0$$

Both of these variables are never negative, but the first represents an increase (a transition *into* spousal caregiving) and the second represents a decrease (a transition *out of* spousal caregiving). For time $t = 1$, in which case X_{it-1} is not observed, both X_{it}^+ and X_{it}^- are set to 0. In a second step we define the following:

$$Z_{it}^+ = \sum_{s=1}^{t} X_{it}^+$$

$$Z_{it}^- = \sum_{s=1}^{t} X_{it}^-$$

Thus, Z^+ is the accumulation up to time t of all previous positive changes in X and Z^- is the accumulation up to time t of all previous negative changes in X. Since X is a dummy variable, Z^+ represent the accumulated transitions into caregiving and Z^- the accumulated transitions out of caregiving. The basic model has the following generic form:

$$Y_{it} = u_t + \beta^+ Z_{it}^+ + \beta^- Z_{it}^- + \alpha_i + \varepsilon_{it}$$

The idiosyncratic error term ε_{it} varies across individuals and over time. The α_i denotes unobserved individual time-constant factors. The strength of this approach is that it allows to control for unobserved time-constant characteristics of a person (e.g. genes, personality, etc.) and to unbiasedly estimate an asymmetrical spousal care effect on health.

A drawback of this approach is that the fixed-effects estimator cannot estimate time-constant effects. Thus, the model does not differentiate between respondents who provided care continuously over all five waves and those who did not provide any spousal care at all. Another implication of this model is that Y_{it} depends on the entire previous history of changes in X. The fact that we do not know the history of X prior to time 1 is not a problem, however, "because that history does not vary over the observed time periods. Therefore, it gets absorbed into α_i, which is removed by first differencing or otherwise adjusted for by standard fixed-effects methods" (Allison, 2018). This method is equivalent to "true" generalized least squares (Arellano, 2003) and is more efficient than ordinary least squares (OLS) even in small samples.

4. Results

4.1. Sample description

Table 1 provides descriptive information on the study sample. Tables 2 to 4 link respondents across successive interview waves to identify transitions into and out of caregiving, showing the transition probabilities for the original "spousal care" variable (X_{it}) from time t to time t_{+1}. The rows reflect the initial values of spousal caregiving (i.e. providing/not providing care at baseline), and the columns reflect the final values (i.e. would-be carers at the time t_{+1}). Generally, at each wave, 95.30% of respondents in the data remained non-caregivers in the next wave (Table 2); the remaining 4.70% became spousal caregivers. Although the non-caregivers have only a 4.7% chance of becoming new caregivers in each wave, those who are already caregivers have an average of 61.74% chance of becoming (or returning) non-caregivers in a subsequent wave. Tables 3 and 4 show that women have more chances to both experience a transition into caregiving (5.19% for women vs. 4.27% for men) and to be continuing caregivers (42.75% for women vs. 33.25% for men).

4.2. Caregiving and caregivers' health

Table 5 shows the estimates of different sets of standard fixed-effects models, estimated separately for each welfare cluster and gender. Results suggest that overall, spousal caregiving has a detrimental effect on the frailty levels of older Europeans. For example, an intraindividual change into spousal care leads to an increase of almost one deficit in the Frailty Index for men that live in Southern European countries (Table 5; β=2.13; 95% CIs: 0.99, 3.27; p<0.001). The only exception to this pattern regards men living in Northern European countries, for which we do not observe any statistically significant association between spousal care and health. Figure 1 summarizes the results from Table 5.

4.3. Caregiving transitions and caregivers' health

Table 6 presents the results of asymmetric fixed-effects linear regression models (Allison, 2018), where we estimated the longitudinal association between the transitions into and out of spousal caregiving with frailty. The results show that generally the transition *into* caregiving has a detrimental consequence in terms of health, for both men and women and among all the institutional settings. However, the association is the strongest for men living in Southern European countries (Table 6; β=3.16; 95% CIs: 1.84, 4.48; p<0.001) and not statistically significant for men living in the Northern European countries. These results are in line with the standard fixed-effects models shown in Table 5. For each regression model, the explained

variance increases slightly. For this reason, and for the fact that they allow for asymmetry, the models presented in Table 6 are superior to those presented in Table 5.

Regarding the transitions *out of* caregiving, it is interesting to note that the only statistically significant effect is found for women living in Southern European countries (Table 6; β=-1.57; 95% CIs: -3.08, -0.07; p<0.01). This means that, apparently, only women who live in this institutional setting experience a *beneficial* effect on health from the transition out of spousal caregiving. Figure 2 summarizes the results from Table 6. A Wald test (on $\beta^+ Z_{it}^+ = \beta^- Z_{it}^-$) confirmed that for Northern European women, Western European men and women, and Southern European man, there is an asymmetrical effect of caregiving on frailty (p<0.05). Table 7 summarizes the results from the different Wald tests.

5. Discussion and Conclusion

In this study, we have investigated how the transitions into and out of spousal caregiving impact on health after midlife and how this impact differs by gender and macro-level context in a sample of individuals aged 50 and above living in 17 European countries. Previous literature suggests that the impact of caregiving on health varies between men and women and that the broader institutional context of various welfare state regimes might mitigate the detrimental effects of caregiving on health, due to differences in the provision of formal care and differences in the specific interactions between the state, the market, and the family in the provision of welfare to the individuals.

Using prospective panel data from five waves of the Survey of Health, Ageing and Retirement in Europe (SHARE), we adopted a novel approach to investigate the influence of informal care transitions on the health conditions of older men and women living in 17 European countries. Our findings are in line with the previous international literature on caregiving and suggest that spousal care has a detrimental impact on health status. The results confirm our hypothesis that the health effects of spousal caregiving are a general, though diversified by gender, phenomenon in European countries. Also, the magnitude of the effect of caregiving on health appeared to be related to welfare state arrangement in which individuals live. In particular, the analysis concerning the transition into and out of caregiving suggest that the caregiver burden is much stronger for men living in the family-based Southern European countries (Greece, Italy, Portugal, and Spain), for women living in the Northern countries (Denmark, Netherlands, and Sweden), and for both men and women living in the former Eastern bloc countries (Czech Republic, Estonia, Poland, and Slovenia). Hence, the results appear to be in line with the idea of a familistic and sub-protective regime characterizing

Southern (Bambra, 2007) and Eastern European countries, where the depletion of the welfare state following the dissolution of the Soviet Union has been associated with a renaissance of familistic values (Mair, 2013). While we did expect spousal caregiving to be weakly associated with health changes for those living in countries in which care responsibilities for individual and professional support is offered extensively by the state (i.e. Denmark, the Netherlands, and Sweden), this expectation was corroborated only for men.

The study has some noteworthy limitations that should be highlighted for future studies. First, the transitions into or out of care that took place between waves are not precisely known. Spousal caregiving that starts and ends between successive waves is missed altogether. This uncertainty about the transitions therefore calls for a different approach and data source that could overcome this insufficiency by allowing a more precise modelling of month-by-month detailed caregiving histories. Second, the samples of several of the caregiving groups were small and therefore the analyses may have lacked power to detect statistically significant relationships with frailty. For example, only 2.37% of the sample experienced at least one transition out of caregiving within the observation window. Third, attrition by those in poor health may have introduced bias into the estimated fixed-effects regression models. Fourth, all dimensions of frailty, except for maximum grip strength, are self-reported and may be sensitive to potential bias caused by gender (Zajacova, Huzurbazar and Todd, 2017) and cross-cultural (Jürges, 2007) and reporting style differences. Finally, no information is available about respondents' caregiving experiences before their first interview for the SHARE. The fact that we don't know the caregiving history prior to the first wave, however, should not be a problem because that history does not vary over the observed time periods. Therefore, it gets absorbed into the time-invariant error term, which is removed by standard fixed-effects methods. Further research is warranted to ascertain the potential role of previous histories of caregiving which are not surveyed in SHARE.

Despite the above-mentioned limitations, this study is, to our knowledge, the first longitudinal cross-national investigation of the magnitude of the relationship between spousal care transitions and health in relation to gender in a sample of older adults over a 11-year period. Our results clearly show that the transitions into the role of spousal caregiver have a detrimental influence in terms of health for both men and women and in all the welfare clusters under analysis. On the contrary, the transitions out of spousal caregiving appear to have no beneficial effect on health. This suggests that the impact of caregiving is somewhat permanent and has lasting effects for the caregiver. Although the results imply that on average the negative consequences of the transitions *into* spousal caregiving outweigh the positive ones arising from

the transitions *out of* caregiving, the good news is that the detrimental effects of spousal caregiving on health appear to be reversible for women living in Southern Europe, and for men and women living in Eastern Europe. This study highlights the asymmetric nature of care transitions and the need to account for care trajectories when assessing the impact and consequences of caregiving. Better understanding of the spousal caregiver career over the life-course is important for all those who plan and provide care for both the caregiver and potentially for the impaired spouse.

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Table 1. Sample characteristics.

	Whole Sample (N=96,356)	Men (N=50,495)	Women (N=45,861)
	% (Mean)	% (Mean)	% (Mean)
Frailty Index (FI)	0.116	0.110	0.122
Gender			
Men	52.40		
Women	47.60		
Spousal Care			
No	94.63	95.26	93.93
Yes	5.37	4.74	6.07
Transitions into spousal caregiving			
0	96.06	96.34	95.76
1	3.90	3.63	4.20
2	0.04	0.03	0.04
Transitions out of spousal caregiving			
0	97.63	97.63	97.62
1	2.35	2.35	2.35
2	0.02	0.01	0.02
Age	65.23	66.21	64.15
Partner's ADL limitations			
At least one limitation in partner ADL	8.74	8.09	9.47
No limitations in partner ADL	91.26	91.91	90.53
Current job situation			
Retired	57.68	65.56	49.00
Employed or self-employed	27.68	29.02	26.20
Non-employed	14.64	5.42	24.79
Income			
First	25.07	25.33	24.79
Second	24.99	24.85	25.13
Third	25.00	24.95	25.06
Fourth	24.94	24.88	25.02
Wealth			
First	25.07	25.38	24.74
Second	24.98	24.99	24.97
Third	25.00	24.90	25.10
Fourth	24.95	24.73	25.19
Welfare cluster			
Northern	18.90	18.86	18.96
Western	38.26	38.49	38.01
Southern	22.01	22.56	21.40
Eastern	20.82	20.09	21.63

Source: SHARE data, years 2004-2015 (own estimates). Unweighted results.

Table 2. Transition probabilities for the variable "spousal care", whole sample.

Spousal Care	No	Yes	Total
No	95.30	4.70	100.00
Yes	61.74	38.26	100.00
Total	93.85	6.15	100.00

Source: SHARE data, years 2004-2015 (own estimates). Unweighted results.

Note: The rows reflect the initial values, and the columns reflect the final values.

Table 3. Transition probabilities for the variable "spousal care", men.

Spousal Care	No	Yes	Total
No	95.73	4.27	100.00
Yes	66.75	33.25	100.00
Total	94.61	5.39	100.00

Source: SHARE data, years 2004-2015 (own estimates). Unweighted results.
Note: The rows reflect the initial values, and the columns reflect the final values.

Table 4. Transition probabilities for the variable "spousal care", women.

Spousal Care	No	Yes	Total
No	94.81	5.19	100.00
Yes	57.25	42.75	100.00
Total	93.01	6.99	100.00

Source: SHARE data, years 2004-2015 (own estimates). Unweighted results.
Note: The rows reflect the initial values, and the columns reflect the final values.

Table 5. Results of fixed-effects linear regression models on frailty, by welfare cluster and gender.

	Northern Europe				Western Europe				Southern Europe				Eastern Europe			
	Men		Women		Men		Women		Men		Women		Men		Women	
Age	0.34***	0.29,0.40	0.32***	0.26,0.38	0.51***	0.46,0.56	0.45***	0.40,0.51	0.40***	0.32,0.47	0.34***	0.26,0.43	0.53***	0.42,0.64	0.43***	0.33,0.53
Spousal Care (ref.: No)																
Yes	0.34	-0.52,1.20	1.22*	0.18,2.27	0.89**	0.22,1.56	1.13***	0.54,1.71	2.13***	0.99,3.27	1.46**	0.39,2.53	1.40**	0.45,2.35	1.08**	0.30,1.86
Partner's ADL (ref: at least one limitation)																
No limitations	-0.73	-1.57,0.11	-0.71	-1.58,0.15	-1.28***	-1.81,-0.74	-1.29***	-1.81,-0.77	-2.96***	-4.11,-1.82	-3.75***	-4.96,-2.55	-2.09***	-2.79,-1.39	-2.12***	-2.78,-1.47
Current Job Situation (ref.: Retired)																
Employed or self-employed	0.25	-0.24,0.74	0.46	-0.07,1.00	1.20***	0.83,1.56	0.87***	0.46,1.28	0.29	-0.33,0.91	-0.22	-1.05,0.60	0.00	-0.60,0.60	0.58	-0.08,1.25
Non-employed	1.42*	0.26,2.58	0.70*	0.13,1.27	2.28***	1.51,3.04	0.72***	0.30,1.14	1.74**	0.70,2.78	-0.11	-0.90,0.68	1.67***	0.72,2.63	2.16***	1.10,3.22
Income (ref: First quartile)																
Second quartile	-0.11	-0.48,0.26	0.21	-0.16,0.58	0.12	-0.19,0.42	-0.25	-0.60,0.09	0.23	-0.25,0.70	0.08	-0.46,0.62	-0.02	-0.52,0.48	-0.04	-0.53,0.44
Third quartile	-0.11	-0.50,0.28	0.27	-0.13,0.66	0.19	-0.12,0.50	-0.17	-0.52,0.17	0.04	-0.45,0.52	0.11	-0.49,0.71	-0.37	-0.84,0.09	0.01	-0.44,0.47
Fourth quartile	-0.02	-0.44,0.39	0.64**	0.20,1.07	0.03	-0.31,0.36	-0.09	-0.47,0.28	0.47	-0.05,1.00	0.72*	0.12,1.33	-0.19	-0.67,0.28	0.10	-0.37,0.56
Wealth (ref: First quartile)																
Second quartile	-0.21	-0.65,0.22	0.11	-0.34,0.56	-0.24	-0.59,0.10	0.18	-0.18,0.53	-0.15	-0.67,0.37	-0.06	-0.67,0.55	-0.36	-0.91,0.18	-0.01	-0.54,0.52
Third quartile	-0.54*	-1.03,-0.05	-0.01	-0.55,0.53	-0.38	-0.76,0.00	0.08	-0.31,0.48	-0.26	-0.86,0.34	-0.26	-0.94,0.42	-0.21	-0.77,0.34	-0.07	-0.62,0.49
Fourth quartile	-0.49	-1.06,0.08	-0.27	-0.88,0.35	-0.03	-0.47,0.41	0.25	-0.19,0.68	0.12	-0.50,0.75	-0.33	-1.07,0.42	-0.41	-1.04,0.23	-0.14	-0.75,0.46
Treatment months	0.00	-0.01,0.01	0.00	-0.01,0.01	-0.01	-0.01,0.00	0.00	-0.01,0.00	0.00	-0.01,0.00	-0.01	-0.01,0.00	-0.01*	-0.02,-0.00	-0.02**	-0.03,-0.01
Constant	-12.94***	-16.80,-9.08	-10.72***	-14.64,-6.79	-22.27***	-25.58,-18.96	-16.86***	-20.37,-13.36	-12.86***	-17.67,-8.05	-5.32	-10.71,0.07	-19.00***	-26.21,-11.80	-11.18***	-17.64,-4.72
rho	0.699		0.739		0.726		0.740		0.606		0.672		0.707		0.726	
sigma_u	6.680		7.358		7.965		8.265		7.691		9.170		9.186		9.302	
R^2 (adjusted)	0.071		0.059		0.087		0.077		0.066		0.055		0.049		0.036	
R^2 (within)	0.072		0.060		0.088		0.078		0.067		0.056		0.050		0.037	
R^2 (overall)	0.082		0.074		0.087		0.096		0.147		0.137		0.104		0.116	
R^2 (between)	0.090		0.080		0.093		0.105		0.179		0.165		0.120		0.133	
N. of groups (individuals)	3425		3168		7045		6399		4303		3773		4018		3950	
N. of observations	9521		8694		19438		17432		11392		9813		10144		9922	

95% confidence intervals in second column

* p<0.05, ** p<0.01, *** p<0.001

Source: SHARE data, years 2004-2015 (own estimates). Unweighted results. Models include all the control variables.

Table 6. Results of asymmetric fixed effects linear regression models on frailty, by welfare cluster and gender.

	Northern Europe				Western Europe				Southern Europe				Eastern Europe			
	Men		Women		Men		Women		Men		Women		Men		Women	
Age	0.34***	0.28,0.39	0.29***	0.24,0.35	0.50***	0.44,0.55	0.43***	0.38,0.48	0.36***	0.29,0.44	0.35***	0.26,0.43	0.51***	0.40,0.62	0.41***	0.31,0.51
Transition into spousal caregiving	0.690	-0.46,1.85	2.21***	0.96,3.45	1.43***	0.61,2.25	1.76***	1.08,2.44	3.16***	1.84,4.48	1.39*	0.13,2.66	1.87**	0.67,3.08	1.56***	0.67,2.45
Transition out of spousal caregiving	0.270	-0.86,1.40	0.730	-0.95,2.41	0.000	-0.85,0.85	0.140	-0.84,1.12	-0.460	-2.03,1.11	-1.57*	-3.08,-0.07	-0.590	-1.89,0.72	-0.200	-1.45,1.05
Partner's ADL (ref: at least one limitation)																
No limitations	-0.700	-1.55,0.14	-0.590	-1.45,0.28	-1.24***	-1.78,-0.71	-1.24***	-1.76,-0.72	-2.89***	-4.02,-1.75	-3.76***	-4.97,-2.55	-2.06***	-2.76,-1.36	-2.08***	-2.74,-1.42
Current Job Situation (ref.: Retired)																
Employed or self-employed	0.240	-0.26,0.73	0.430	-0.10,0.96	1.18***	0.81,1.54	0.82***	0.42,1.23	0.250	-0.37,0.86	-0.220	-1.04,0.60	-0.030	-0.63,0.58	0.550	-0.12,1.21
Non-employed	1.41*	0.26,2.56	0.68*	0.11,1.25	2.26***	1.50,3.03	0.69**	0.27,1.12	1.73**	0.68,2.77	-0.100	-0.89,0.69	1.68***	0.73,2.63	2.15***	1.09,3.21
Income (ref: First quartile)																
Second quartile	-0.100	-0.46,0.27	0.200	-0.16,0.57	0.120	-0.18,0.42	-0.240	-0.58,0.10	0.230	-0.25,0.70	0.080	-0.46,0.62	-0.010	-0.51,0.49	-0.030	-0.51,0.45
Third quartile	-0.100	-0.49,0.29	0.240	-0.15,0.64	0.200	-0.11,0.50	-0.170	-0.51,0.18	0.040	-0.44,0.53	0.110	-0.49,0.71	-0.360	-0.83,0.10	0.030	-0.43,0.49
Fourth quartile	-0.020	-0.43,0.39	0.64**	0.21,1.07	0.020	-0.31,0.35	-0.100	-0.48,0.28	0.470	-0.05,0.99	0.73*	0.12,1.33	-0.190	-0.67,0.29	0.110	-0.35,0.57
Wealth (ref: First quartile)																
Second quartile	-0.220	-0.66,0.22	0.080	-0.36,0.52	-0.250	-0.59,0.10	0.170	-0.18,0.53	-0.150	-0.67,0.37	-0.060	-0.67,0.55	-0.360	-0.90,0.19	-0.010	-0.54,0.52
Third quartile	-0.54*	-1.02,-0.05	-0.030	-0.57,0.51	-0.370	-0.75,0.01	0.090	-0.30,0.48	-0.270	-0.86,0.33	-0.260	-0.94,0.42	-0.210	-0.77,0.34	-0.050	-0.61,0.51
Fourth quartile	-0.480	-1.05,0.09	-0.310	-0.93,0.31	-0.020	-0.45,0.42	0.260	-0.17,0.69	0.120	-0.51,0.74	-0.320	-1.07,0.42	-0.400	-1.03,0.24	-0.130	-0.74,0.47
Treatment months	0.000	-0.01,0.01	0.000	-0.01,0.01	0.000	-0.01,0.00	0.000	-0.01,0.00	0.000	-0.01,0.00	-0.010	-0.01,0.00	-0.01*	-0.02,-0.00	-0.02**	-0.03,-0.01
Constant	-12.46***	-16.33,-8.59	-9.25***	-13.10,-5.40	-21.24***	-24.56,-17.91	-15.25***	-18.67,-11.82	-10.80***	-15.61,-5.99	-5.370	-10.79,0.05	-17.80***	-25.01,-10.59	-9.93**	-16.49,-3.37
rho	0.698		0.739		0.725		0.739		0.607		0.673		0.706		0.726	
sigma_u	6.667		7.346		7.937		8.249		7.691		9.194		9.163		9.303	
R^2 (adjusted)	0.071		0.063		0.088		0.079		0.068		0.055		0.049		0.036	
R^2 (within)	0.072		0.064		0.089		0.080		0.069		0.056		0.051		0.038	
R^2 (overall)	0.084		0.077		0.088		0.097		0.149		0.133		0.105		0.117	
R^2 (between)	0.091		0.082		0.093		0.104		0.180		0.161		0.120		0.134	
N. of groups (individuals)	3425		3168		7045		6399		4303		3773		4018		3950	
N. of observations	9521		8694		19438		17432		11392		9813		10144		9922	

95% confidence intervals in second column

* p<0.05, ** p<0.01, *** p<0.001

Source: SHARE data, years 2004-2015 (own estimates). Unweighted results. Models include all the control variables.

Table 7. Wald tests on $\beta^+ Z_{it}^+ = \beta^- Z_{it}^-$ from regression models showed in table 6.

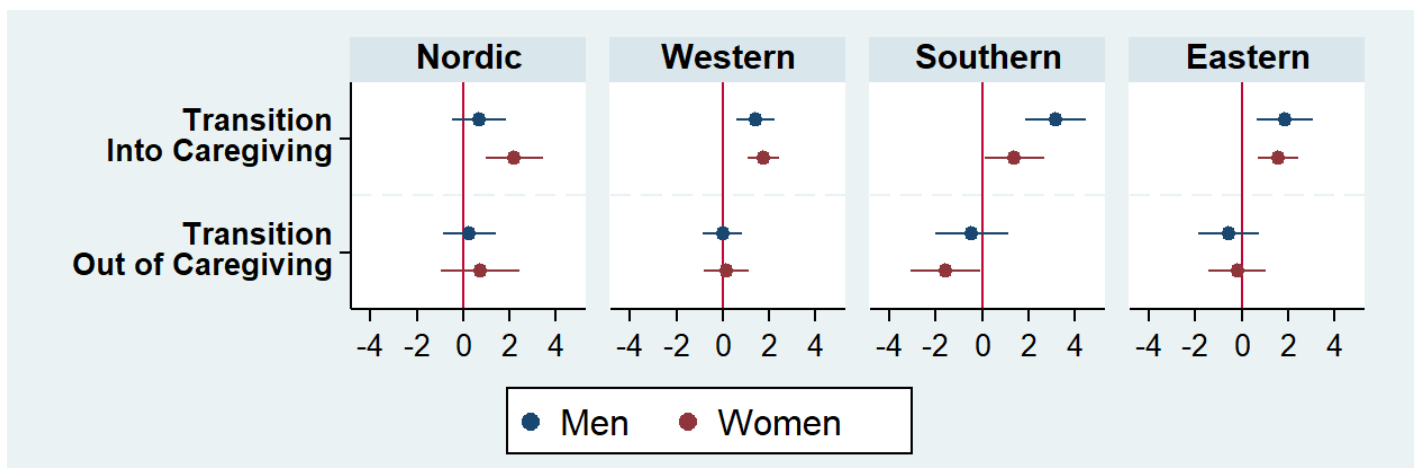| Welfare Cluster - Gender	Prob > F
Northern Men	0.2312
Northern Women	0.0044
Western Men	0.0061
Western Women	0.0012
Southern Men	0.0030
Southern Women	0.8349
Eastern Men	0.1345
Eastern Women	0.0597

Source: SHARE data, years 2004-2015 (own estimates).

Figure 1. Spousal caregiving by welfare cluster and gender.

Source: SHARE data, years 2004-2015 (own estimates). Unweighted results.

Figure 2. Spousal caregiving by welfare cluster and gender.

Source: SHARE data, years 2004-2015 (own estimates). Unweighted results.