The pains and reliefs of the transitions into and out of spousal caregiving. A cross-national comparison of the health consequences of caregiving by gender

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ABSTRACT

Spousal caregiving offers a unique opportunity to investigate how gender shapes the influence of care responsibilities on health at older ages. However, empirical evidence supporting a causal link between the transitions into and out of caregiving and health is mixed. 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 and 2015 for a total of 43,435 individuals and 117,831 observations. Health is defined as a Frailty Index calculated from 40 items. Caregiving is defined as intensive help with personal care provided to spouses. Results from asymmetric fixed-effects linear regression models show that the transitions into caregiving have a detrimental effect on health. On the contrary, the transitions out of caregiving have in most cases no beneficial consequences on health. Most importantly, we found evidence supporting differential effects of caregiving transitions by gender and welfare arrangement: the transitions out of caregiving are associated with better health conditions only for Southern and Eastern European women. Our study highlights the asymmetric and gendered nature of care transitions and suggests that the impact of caregiving is somewhat permanent and has long lasting effects for the caregiver. Policies should account for this asymmetry when assessing the impact and consequences of caregiving.

1. Introduction

In Europe, increased life expectancy is causing a rise in the number of older adults in need of long-term care (LTC) (Agree and Glaser, 2009). With some geographical variations, the majority of informal care is provided by families (Agree and Glaser, 2009; Verbakel et al., 2017) and, within families, the most prevalent source of caregiving in later life is a spouse (Agree and Glaser, 2009; Johansson and Sundström, 2005; Pickard et al., 2000). Although the proportion of older men assuming roles as caregivers is increasing (Patterson and Margolis, 2019; Sharma et al., 2016), informal care responsibilities are often uniquely shouldered by women (Bertogg and Strauss, 2018; Calasanti, 2010; Pinquart and Sörensen, 2011, 2006; Yee and Schulz, 2000). Moreover, the combinations of informal and formal care use of older adults in Europe differs considerably cross-nationally, suggesting that the provision of informal care is affected by country-specific characteristics (Johansson and Sundström, 2005; Suanet et al., 2012).

Caregiving can be experienced as a reason to maintain good health, which may ultimately result in lower mortality and other positive health outcomes (Fredman et al., 2015; Miyawaki et al., 2019; Roth et al., 2015). Yet, the literature provides evidence that caregiving may lead to continued distress, which is assumed to translate into poor physical and mental health conditions (Pearlin et al., 1990; Pinquart and Sörensen, 2003). For this reason, the disproportionate toll of care responsibilities on women might have many implications for their health (Pinquart and Sörensen, 2006, 2003; Schulz and Martire, 2004; Zarit et al., 1980). This is especially true for spousal caregivers (Nieboer et al., 1998; Pinquart and Sörensen, 2003), since entering this role is unique in that it "is disruptive to a wife's leisure pursuits, family relations, and marital relationship because the wife's 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) and many informal caregivers do not have a choice in taking on the caregiving role. This lack of choice is associated with

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higher levels of emotional stress, physical strain, and other negative health outcomes (Schulz et al., 2012), especially when the public LTC supply is scarce (Wagner and Brandt, 2018). As Pearlin and colleagues suggest (Aneshensel et al., 1995; Pearlin and Aneshensel, 1994), unlike most "careers", caregiving is unplanned and often unexpected: "becoming a caregiver is not a normatively expected transition and, therefore, is not preceded by systematic preparation" (Pearlin, 2010, p. 210). This ambiguity has been shown to be more characteristic for spousal caregivers than for other types of caregivers (Montgomery and Kosloski, 1994). Knowledge about the interactions between gender and spousal caregiving may contribute to the understanding of the mechanisms underlying the health conditions of older female and male caregivers.

Spousal caregiving offers a unique opportunity for investigating how gender shapes the impact of care responsibilities on health in later life (Calasanti, 2010). However, while caregiving research is abundant, there are three key shortcomings. First, recent longitudinal empirical evidence found that women suffer more – in terms of mental health – from caregiving than men (Dunkle et al., 2014; Hirst, 2005). On the contrary, other studies did not find such gender differential effect (e.g. Kaufman et al., 2019; Taylor et al., 2008), and a study using German data and fixed-effects models did find larger detrimental mental health effects for caregiving husbands (Hajek and König, 2016). These contradictions may reflect differences in study design across countries, sample composition, methods, and measures of health employed.

Second, previous research tends to overlook the role of the transitions into and out of caregiving in influencing older men and women's health outcomes. While existing studies are mainly focused on the comparison between groups of non-caregivers and (new) caregivers – or examined only transitions into caregiving (e.g. Marks et al., 2002) or out of it (e.g. Taylor et al., 2008) – only recently some attempts have been made to investigate the effects of transitioning versus providing care in general (e.g. Dunkle et al., 2014). Moreover, while some studies indicate a beneficial health effect of transitions out of caregiving on mental health and well-being (e.g. Gaugler et al., 2010; Schulz et al., 2003a), others have found that distress increases after caregiving ends (Hirst, 2005; Liu and Lou, 2017). Most importantly, the current literature presumes that effects of the transitions into and out of spousal caregiving on health are *symmetric*. That is, the effect of taking up caregiving activities on health is the same as the effect of stopping caregiving but in the opposite direction.

Third, 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, 2018), there is a limited body of cross-national research on spousal caregivers' well-being and only a few comparative analyses have been conducted on gender differences in health at older ages.

The aim of this study is to contribute to the existing literature on gender inequalities in health in later life essentially in four main ways. First, for the purpose of clarifying the mixed results reported in the previous literature, the differential impact of spousal caregiving on the health of women and men is assessed using cross-national longitudinal panel data. Although the existing literature uses longitudinal data, it mainly focuses on a comparison between individuals who provide care and those who do not. We aim to tackle this issue by applying a fixed-effects approach as a specific way of addressing the influence of time-constant unobserved individual factors (i.e. omitted variables) that can confound the association between caregiving and health (Allison, 2009; Halaby, 2004). In this study, we employed an innovative approach – based on fixed-effects methods – that allows caregiving effects to be asymmetric (Allison, 2019).

Second, while other previous studies tend to focus on single-item health measures (mainly depression), we adopt a multidimensional and more general conceptualisation of health using a Frailty Index as outcome variable (Fried et al., 2001; Romero-Ortuno and Kenny, 2012; Schuurmans et al., 2004). This measure was found to be a strong

predictor of adverse health outcomes, including institutionalisation, disability, and subsequent mortality (Fried et al., 2001; Romero-Ortuno and Kenny, 2012). Clarifying the mixed results in the past literature can guide future policies devoted to implementing physical and mental health interventions that might promote better quality of life for the informal caregivers and for the older adults who receive that care.

Third, our research is contextualised in a sample of individuals for which their spouses are still alive and living at home together with their spouse (Dunkle et al., 2014). Whereas other studies have especially focused on the consequences of bereavement on the health of the spousal caregiver (e.g. Stroebe et al., 2007), we are interested in studying how the transitions into and out of the role of spousal caregiver – for a spouse who might have non-critical illnesses – affect differently the personal health of older men and women.

Fourth, we will investigate what is the impact of caregiving transitions on health within four different institutional contexts which can amplify or buffer the consequences that derive from spousal caregiving. The institutional context in which women and men are embedded (e.g. welfare state) might mitigate the detrimental effects of informal caregiving on health, due to differences in the availability of formal care services 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*) Do the transitions into the role of spousal caregiving have the same effect on individual health as the transitions out of the role of spousal caregiving (in the opposite direction)? (*b*) Does the impact of the transition into and out of caregiving on health in later life differ between women and men? (*c*) If so, does the specific welfare state arrangement play a role?

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

2.1. Spousal care transitions and associations with health

Caregiving can be conceptualized as a career (Pearlin, 1992). During a 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). Consequently, the impact of spousal caregiving on health is not static along the caregiving trajectory.

From the perspective of the "stress process" framework (Pearlin et al., 1990), the transition into the caregiver role might have detrimental consequences on health depending on the caregivers' abilities to manage stress over time. 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 the one hand, transitions *into* caregiving are frequently associated with increased distress (Hirst, 2005) and depressive symptoms (Kaufman et al., 2019), although not all studies have found a significant association (Seltzer and Li, 2000). On the other hand, with some notable exceptions (e.g. Dunkle et al., 2014), prior research about transitions *out of* caregiving focuses on those whose care receivers died or were institutionalized. Among these studies, there is evidence suggesting that stopping care because of the spouse's death (Cannuscio et al., 2002; Haley et al., 2008; Li, 2005; Schulz et al., 2003b) 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. A possible explanation that may account for this relief is related to the fact that individuals who stop caregiving might have more time and resources to care for themselves, or to experience gains in social participation and personal growth after transitioning out of the role (Seltzer and Li, 2000).

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 suggests that women are more vulnerable to the negative consequences of caregiving than men (Mc Donnell and Ryan, 2013; Pinquart and Sörensen, 2011, 2006; Yee and Schulz, 2000).

According to one line of reasoning, based on the stress process framework (Pearlin et al., 1990), women and men live in different structural contexts in which the unequal distribution of opportunities, constraints, rewards, privileges, and responsibilities can lead to different types and intensities of stressors to which individuals are exposed. Hence, more stressors (e.g. job-caregiving conflicts) and fewer personal and social resources for women (e.g. lower levels of education) 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, 2010; Calasanti and King, 2007; Gilligan, 1982; Mc Donnell and Ryan, 2013; Yee and Schulz, 2000). According to this perspective, traditional gender roles may define 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 might 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 and lead men to be more successful in separating their emotions from the "tasks at hand" (Calasanti, 2010; Calasanti and King, 2007, p. 523; Mc Donnell and Ryan, 2013).

At the same time, men are more likely to seek and receive outside assistance with caregiving from formal (e.g. home-delivered meals programs) and informal sources (e.g. friends or family members) than women (Mc Donnell and Ryan, 2013; Yee and Schulz, 2000). Moreover, men are more likely to be praised for their efforts that go beyond the traditional masculine role (Calasanti and King, 2007). In contrast, women might be confronted with higher 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 lead them to view it as their responsibility to meet all of their spouse's needs – a potentially impossible goal – and introduce failures in their expected feminine role as nurturers and carers. This would imply more potential for stress for women than for men (Calasanti, 2010; Calasanti and King, 2007). Thus, the health effects of caregiving might be stronger for women than for men.

Guided by the above theoretical arguments and empirical literature, we evaluate 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

Caregivers' health conditions are influenced by the institutional context in which caregivers and care receivers are embedded. For example, the availability of formal care services might affect the individual choice to assume caring responsibilities, since the provision of informal care by families might complement or substitute the provision of formal care by the state (Bonsang, 2009; Brandt, 2013; Brandt et al., 2009; Kohli, 1999; Künemund and Rein, 1999; Van Houtven and Norton, 2004). According to the stress process framework, formal care options help reducing intrapsychic strain which leads to stress and ultimately to negative mental and physical health outcomes (Pearlin et al., 1990). Moreover, specific policy measures might affect the extent to which it is financially feasible to withdraw from the labour market to provide informal care for family members in need (Guo and Gilbert, 2007; Pavolini and Ranci, 2008; Pfau-Effinger, 2005).

Recent research shows that health consequences of informal care vary cross-nationally according to the characteristics of formal care options (e.g. LTC), the public old age and family transfers, or the attitudes toward familial caregiving (Dujardin et al., 2011; Kaschowitz and Brandt, 2017; Pearlin et al., 1990; Ruppanner and Bostean, 2014; Wagner and Brandt, 2018).

A central aspect of welfare state regime theory is devoted to countries' approaches to the care of dependent individuals (Esping-Andersen, 1990) and there are two main propositions regarding how the state and the family interact in sharing their care responsibilities (Kaschowitz and Brandt, 2017). One is the "complementarity" thesis, which postulates that public and private support are complementary (state and family complement each other); the other is the "substitution" thesis, which states that there is an inverse relationship between formal service provision and informal family care (the two types of support can substitute for each other) (Kohli, 1999; Künemund and Rein, 1999). The first of these, complementarity between family and state, can be seen as a specific form of division of labour in terms of "specialization" (Brandt, 2013, p. 46; Kaschowitz and Brandt, 2017).

Complementarity is expected to be more prevalent in generous welfare states, where "family members are […] enabled to give additional support to their relatives if, when and in which form they like to" (Brandt, 2013, p. 30). Therefore, in these institutional contexts, women and men might support their relatives with (low intensity) "help" instead of intensive informal care (Kaschowitz and Brandt, 2017; Verbakel et al., 2017). This pattern is expected to be inverted in less generous welfare states, in which women are compelled to supply more intense forms of care and support, like spousal caregiving (Bonsang, 2007; Brandt, 2013; Kaschowitz and Brandt, 2017).

In countries in which the availability of formal care options is more consistent (such as in Northern European countries), 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 activities. The availability of formal care in such "service-based" countries (Haberkern and Szydlik, 2008; Kaschowitz and Brandt, 2017) can buffer the stressors that arise from the burdens due to fulfilling multiple social roles beyond being a caregiver (e.g. that of a spouse, a parent, or an employee). On the contrary, in the more familistic countries (such as in the Southern and Eastern European countries) 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. 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 higher and a larger gap in health in familistic ones. Similarly, we would expect a stronger beneficial effect in terms of health for those who experience a transition out of spousal caregiving in those welfare states that lack of family policies and formal support services for the caregivers.

Considering the above literature, we propose the following hypothesis:

H5. We expect a stronger effect of caregiving transitions on health in *Southern* (Greece, Italy, Portugal, and Spain) and *Eastern* European

countries (Czech Republic, Estonia, Poland, and Slovenia), compared to *Northern* (Denmark, Netherlands, and Sweden) and *Western* European countries (Austria, Belgium, France, Germany, Luxembourg, and Switzerland).

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 family relations of older Europeans. Our empirical analysis uses data from the first (2004–2005), second (2006–2007), fourth (2011–2012), fifth (2013), and sixth (2015) wave of SHARE. The retrospective third (2008–2009) and seventh (2017) waves of SHARE were excluded from the analyses as they focus on the respondents' life histories and because the questionnaire and variables are not comparable to the core data. Our analysis is based on 17 countries: Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Greece, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, and Switzerland.

The original SHARE sample included 243,949 person-year observations from 109,519 individuals. In this study, we use only records of individuals who met the original SHARE sample criteria, i.e. 50 years of age or older (6203 person-year excluded), and who had a spouse who also participated in the SHARE survey during the same period and not institutionalized. Therefore, we further restricted the analytical sample to couples who lived together during the whole period of observation (65,472 person-year excluded), and were married to the same person throughout the observation window (477 person-year excluded). Moreover, we dropped respondents in same-sex couples (401 person-year excluded) as both would appear in the same model (i.e., as both husbands or both wives). Since we focused on the influence of spousal caregiving transitions on potential caregiver's health *changes*, we restricted our sample to those individuals who participated in the SHARE survey in at least two waves (30,609 person-year excluded). After this selection, the sample consisted of 140,787 person-year observations. An additional 22,956 person-year were dropped from the analysis because information on one or more of the covariates of interest were missing. Thus, the final analytic sample included 117,831 person-year observations from 43,435 individuals. Table 1 provides descriptive information on the study sample. Importantly, we should note that not all 17 countries participated in all five waves. The analytical model that we use can handle such an unbalanced design. The only requirement is to have observation for at least two waves.

3.2. Dependent variable

For the dependent variable we use a 40-item Frailty Index (FI), which is a count of physical and mental health problems reflecting the accumulation of potential deficits affecting a given person (Rockwood and Mitnitski, 2007). This measure indicates the degree of frailty present in older adults and it has been consistently found to be a strong predictor of adverse health outcomes, including subsequent mortality (Fried et al., 2001; Romero-Ortuno and Kenny, 2012). Unlike single-item health measures commonly used in caregiving literature, the FI can provide a more complete picture of older adults' overall health. We constructed the FI in accordance with standard procedures (Romero-Ortuno and Kenny, 2012; Searle et al., 2008), employing objective health markers (e.g. grip strength), functional impairments in personal and instrumental activities of daily living, self-reported health and co-morbidities, mood, limitations in cognition, 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. Therefore, we 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 0.896. Missing values for each item were negligible: except for grip strength (7.58% of missing, 13,031 observations), all items showed less than 3% missing values. Full information on the FI deficit variables and cut-off points, are reported in Supplementary Table A1.

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?*", with answer categories "Yes" and "No". To avoid capturing help during short-term sickness of family members, 'regularly' is explicitly meant to refer to "daily or almost daily during at least three months". To avoid problems of misclassification, individuals who provided care to other persons than a spouse (such as parents, siblings, friends, etc.) were set to missing, which amounted to about one-fourth (26.84%) of the total caregivers. Individuals who provided care to their spouses are coded as 1. Hence, the value 0 indicates "no spousal care" and the value 1 indicates "spousal care".

3.4. Classification of countries

We grouped the European countries under analysis in four welfare clusters: *Northern* (Denmark, Netherlands, and Sweden), *Western* (Austria, Belgium, France, Germany, Luxembourg, and Switzerland), *Southern* (Greece, Italy, Portugal, and Spain), and *Eastern* (Czech Republic, Estonia, Poland, and Slovenia). 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 (Bambra, 2007; Esping-Andersen, 1999, 1990; Ferrera, 1996; Gauthier, 2002; Mair, 2013).

3.5. Potentially confounding factors

We controlled for a number of individual and couple-related factors that were likely to be associated to both the provision of care and to the health outcome (Pearlin et al., 1990): respondent's age (range 50–98), respondent's current job situation (retired, employed or self-employed, non-employed), household income and wealth quartiles (country and wave-specific), and SHARE wave.

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 "time under observation"). This variable allowed to control for the length of the time between SHARE waves (Emery and Mudrazija, 2015).

3.6. Statistical methods

To examine the asymmetric associations between caregiving transitions and health we adopt a novel approach based on fixed-effects regression models (Allison, 2019). By "asymmetric" it is meant to allow the effects of entering and exiting caregiving to differ in terms of magnitude. Following the procedure suggested by Allison (2019), we estimate a fixed-effects model in which we observe Y_{it} (the health outcome) and X_{it} (the original spousal care dummy variable) for time $t = 1, ..., 5$.

For the asymmetric fixed-effects models, we first define two dynamic counter variables of spousal care that increase with each

Table 1
Descriptive statistics of variables in the analyses.
Source: SHARE data, years 2004–2015 (own estimates).

	Whole sample					Men					Women				
	N	% (Mean)	SD	Min.	Max.	N	% (Mean)	SD	Min.	Max.	N	% (Mean)	SD	Min.	Max.
Frailty Index (FI)	117,831	*(11.36)*	9.556	0	83.8	60,996	*(10.79)*	9.197	0	82.5	56,835	*(11.97)*	9.891	0	83.8
Age	117,831	*(64.87)*	8.706	50	98	60,996	*(65.94)*	8.943	50	98	56,835	*(63.72)*	8.293	50	95
Gender															
Men	60,996	51.77													
Women	56,835	48.23													
Spousal Care															
No	111,676	94.78				58,177	95.38				53,499	94.13			
Yes	6,155	5.22				2,819	4.62				3,336	5.87			
Transition: into spousal caregiving															
0	113,230	96.10				58,818	96.43				54,421	95.75			
1	4,546	3.86				2,158	3.54				2,388	4.20			
2	46	0.04				20	0.03				26	0.05			
Transitions out of spousal caregiving															
0	115,097	97.68				59,583	97.68				55,514	97.68			
1	2,715	2.30				1,406	2.31				1,309	2.30			
2	10	0.02				7	0.01				12	0.02			
Current job situation															
Retired	65,970	55.90				39,059	64.04				26,920	47.37			
Employed or self-employed	34,470	29.25				18,580	30.46				15,890	27.96			
Non-employed	17,382	14.75				3,357	5.50				14,025	24.68			
Income (quartiles)															
First	29,514	25.05				15,306	25.09				14,208	25.00			
Second	29,445	24.99				15,012	24.61				14,433	25.39			
Third	29,473	25.01				15,116	24.78				14,357	25.26			
Fourth	29,300	24.95				15,562	25.51				13,837	24.35			
Wealth (quartiles)															
First	29,511	25.05				15,408	25.26				14,103	24.81			
Second	29,460	25.00				15,305	25.09				14,155	24.91			
Third	29,458	25.00				15,126	24.80				14,332	25.22			
Fourth	29,402	24.95				15,157	24.85				14,245	25.06			
Welfarecluster															
Northern	23,670	20.09				12,153	19.92				11,517	20.26			
Western	46,067	39.10				24,120	39.54				21,947	38.62			
Southern	24,657	20.93				13,046	21.39				11,611	20.43			
Eastern	23,437	19.89				11,677	19.14				11,760	20.69			

Note: Unless otherwise indicated, values are reported in percentages. Unweighted pooled dataset (Person-Year, N = 117,831).
[a] Continuous variable: mean (in brackets).

additional transition *into* care (Z_{it}^+) and with each additional transition *out of* care (Z_{it}^-) over the 11-year follow-up period. To do so, it is necessary to decompose the difference scores of the original spousal care dummy variable (X_{it}) into a positive and a negative component:

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

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

The variable X_{it}^+ represents an increase (a transition *into* spousal caregiving) and X_{it}^- represents a decrease (a transition *out of* spousal caregiving). When X_{it-1} is not observed (e.g. in the first wave of SHARE, when $t = 1$) both X_{it}^+ and X_{it}^- are set to 0. Then, we define the following:

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

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

In this case, Z_{it}^+ is the individual accumulation up to time t of all previous positive changes in X and Z_{it}^- is the accumulation up to time t of all previous negative changes in X. Since the original spousal care variable X_{it} is a dummy variable, Z_{it}^+ represent the accumulated transitions into caregiving and Z_{it}^- the accumulated transitions out of caregiving. This operationalization of spousal care enables us to disentangle the effect of the transitions *into* and *out of* spousal care in the fixed-effects models (Allison, 2019). The two variables permit to assess whether 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. Table 1 shows descriptive information about the samples of each caregiving group. The compact formulation of the asymmetric fixed-effects model has the following generic form (Allison, 2019):

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

In this model, u_t represents the intercept, which is allowed to differ at each time point. 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-invariant characteristics of a person (e.g. genetic predisposition or personality) and to estimate an asymmetrical spousal care effect on health.

A drawback of this approach is that the fixed-effects estimator cannot estimate time-constant effects. Moreover, while this design formally eliminates the threat of time-constant unobserved heterogeneity, time-varying omitted variables (such as previous histories of health) can still result in biased estimates. Another implication of this model, as we discuss more in the conclusion, is that Y_{it} depends on the entire previous history of changes in X. The fact that we do not know the entire individual caregiving history prior to the first wave of SHARE is not a problem, however, because that history will be adjusted for by standard fixed-effects methods (Allison, 2019, p. 8). Following the indications provided by Allison (2019), we perform a series of Wald tests to assess whether the effects of caregiving on health are symmetric

Table 2
Results of asymmetric fixed-effects linear regression models on frailty, by gender.

	Men		Women	
	β	95% CI	β	95% CI
Transition into spousal caregiving	2.28***	1.80,2.76	2.33***	1.91,2.74
Transition out of spousal caregiving	−0.35	−0.89,0.19	−0.63*	−1.20, −0.06
Age	0.41***	0.38,0.44	0.35***	0.32,0.38
Current Job Situation				
(ref.: Employed or Self-employed)				
Retired	−0.58***	−0.80, −0.36	−0.47***	−0.72, −0.22
Non-employed	1.39***	0.98,1.80	0.17	−0.12,0.46
Income (ref: First quartile)				
Second quartile	0.00	−0.17,0.18	−0.05	−0.24,0.14
Third quartile	−0.02	−0.20,0.16	0.07	−0.13,0.26
Fourth quartile	0.01	−0.18,0.21	0.20+	−0.00,0.40
Wealth (ref: First quartile)				
Second quartile	−0.21*	−0.42, −0.00	0.09	−0.13,0.31
Third quartile	−0.28*	−0.51, −0.04	−0.02	−0.26,0.22
Fourth quartile	−0.12	−0.38,0.14	0.03	−0.23,0.30
Time under observation	−0.00*	−0.01, −0.00	−0.00**	−0.01, −0.00
Constant	−15.89***	−17.69, −14.08	−10.10***	−11.88, −8.32
rho	0.694		0.731	
sigma_u	7.929		8.702	
R^2 (adjusted)	0.064		0.046	
R^2 (within)	0.064		0.047	
R^2 (overall)	0.098		0.089	
R^2 (between)	0.110		0.102	
N. of groups (individuals)	22,335		21,100	
N. of observations	60,996		56,835	

Source: SHARE data, years 2004–2015 (own estimates). Unweighted results. Models include all the control variables.
Note: 95% confidence intervals in second column.
+ p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001.

$(\beta^+ = -\beta^-)$.

To formally test whether the association between caregiving and health varies across gender and welfare clusters, we estimated a fully interacted regression model with product terms for caregiving, gender, and welfare cluster for all older adults combined. In order to ease the interpretation of the three-way interactions, we also present average marginal effects (AME) in graphical form, along with their confidence intervals. Last, we conduct a series of chi-square test to examine whether the differences in the marginal effects are statistically different from zero. The difference between any two marginal effects is estimated using the 'mlincom' command in a Stata package called SPost13 by Long and Freese (2014). All models include standard errors clustered at the household level, which adjusts for clustering within couples (Wooldridge, 2013). All data were analysed using Stata 15.1.

4. Results

Table 2 presents the results of asymmetric fixed-effects linear regression models – estimated separately for each gender – where we evaluated the longitudinal associations between the transitions into and out of spousal caregiving with frailty, adjusted for the covariates previously described. The results in Table 2 show that the transition *into* caregiving has detrimental consequences in terms of health, for both men and women. For example, the transition into spousal care leads to an increase of 2.33 points in the FI for women (Table 2, β = 2.33; 95% CIs: 1.91, 2.74; p < 0.001). By contrast, transitions *out of* caregiving are inversely related to the FI. This would suggest a beneficial effect of stopping spousal caregiving on health. However, this difference is very small in magnitude and statistically significant only for women (Table 2, β = −0.63; 95% CIs: −1.20, −0.06; p < 0.05).

Further results from Table 2 deserve comments, though they are not the focus of interest of this article. Consistent with previous research on the scarring effects of unemployment, the results reveal that being non-

employed is positively associated with poor health for men. More interestingly, the size of the coefficients suggests that individual's frailty levels increase with the transitions into spousal caregiving (e.g. Table 2, Men, β = 2.28; 95% CIs: 1.80, 2.76; p < 0.001) to a greater extent as experiencing non-employment (e.g. Table 2, Men, β = 1.39; 95% CIs: 0.98, 1.80; p < 0.001). The models show a statistically significant negative effect of retirement on changes in frailty levels, for both men (Table 2, β = −0.58; 95% CIs: −0.80, −0.36; p < 0.001) and women (Table 2, β = −0.47; 95% CIs: −0.72, −0.22; p < 0.001). Regarding the role of income and wealth, a Wald test for joint significance confirms that the intra-individual change in income and wealth does not cause a substantive change in health after midlife (p > 0.05).

To investigate whether caregiving-related changes in the FI differed significantly by gender and welfare cluster, we estimated an asymmetric fixed-effects model with interaction terms between caregiving, gender, and welfare cluster. Fig. 1 reports the estimated average differences in the FI for men and women who experience transitions into and out of caregiving, compared to not experiencing transitions, across the four welfare clusters (full model estimates in tabular form are shown in Supplementary Table A2).

Fig. 1 shows that the detrimental health effect of the transitions *into* spousal caregiving is statistically significant in all the four institutional contexts and for both genders. However, we do not observe any statistically significant gender difference with respect to transitioning into caregiving in any of the four institutional contexts examined (differences between marginal effects are reported in Supplementary Table A3).

The pattern is more complex in the case of transitions *out of* spousal caregiving. Results from Fig. 1 indicate that the beneficial health effect of the transition out of spousal caregiving is statistically significant only for female caregivers living in Southern and Eastern European countries. For example, women living in Southern European countries who experience transitions out of caregiving have on average 2.31 less
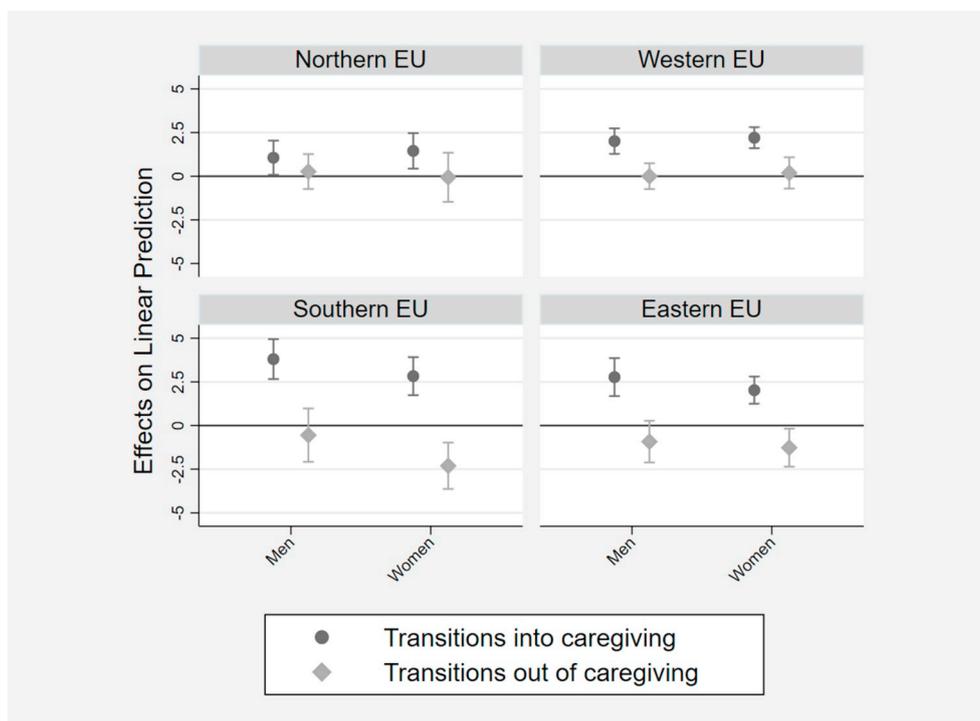
Fig. 1. Asymmetric fixed-effects linear regression models: predicted average differences in frailty, by welfare cluster and gender. Estimates and 95 per cent confidence intervals. Note: Models include all the control variables. Complete models are displayed in Supplementary Table A2.

points in the FI than those who do not experience transitions out of spousal caregiving (Fig. 1, AME = −2.31; 95% CIs: −3.63, −0.98; p < 0.001), after controlling for age, current job situation, income, and wealth. A Wald test (on $\beta^+ = -\beta^-$) further confirmed that there is evidence for a symmetrical effect of caregiving on frailty for women living in Southern and Eastern European countries (p > 0.10). Comparing with men, the impact of the transition out of caregiving appear to be stronger for women who live in Southern Europe (Supplementary Table A3).

Concerning our research question regarding the health consequences of caregiving across different welfare systems, Fig. 1 also shows how the effects of caregiving transitions are markedly larger in Southern and Eastern European countries compared to the Northern and Western European countries. To further substantiate these findings, we conducted a series of chi-square tests to examine whether the difference in the marginal effects across welfare clusters is statistically different from zero (Supplementary Table A4). Considering the transitions *into* caregiving, in comparison to Western Europe (diff. = 1.795; 95% CIs: 0.438, 3.152; p < 0.01) and, even more, to Northern Europe (diff. = 2.743; 95% CIs: 1.241, 4.245; p < 0.001), men living in Southern Europe exhibit the largest differences in the FI. For women, statistically significant differences in marginal effects across welfare clusters are observed only when comparing Southern and Northern Europe (diff. = 1.376; 95% CIs: −0.116, 2.867; p < 0.10). Considering the transitions *out of* caregiving, the differences between welfare clusters are statistically significant only among women. For example, the difference in marginal effects between Southern and Northern European women equals to −2.2 points in the FI (diff. = −2.245; 95% CIs: −4.179, −0.310; p < 0.05). Analyses stratified by welfare cluster and gender show similar patterns as observed in the main analyses (Supplementary Table A5).

5. Discussion and conclusion

In this study, we 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. Most important, we considered a sample of adults for which their spouses are still alive and who are still living together and not in an institution. 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 European men and women. Framing our theoretical elaboration within a macro-comparative approach, we examined the importance of the specific interactions between the state, the market, and the family in addressing care needs.

In line with recent longitudinal studies on the mental effects of caregiving (e.g. Kaufman et al., 2019), we found that transitioning into caregiving activity is frequently associated with increased frailty levels in all the four European contexts under analysis. This result lends support to hypothesis H1. Conversely, transitions out of spousal caregiving are associated with better health, but only for female caregivers who live in Southern (Greece, Italy, Portugal, and Spain) and Eastern (Czech Republic, Estonia, Poland, and Slovenia) European countries (hypothesis H2). No significant interaction effects between gender and transitions into spousal caregiving are found (hypothesis H3). However, interaction effects between gender and transitions out of caregiving are found in the Southern European welfare cluster, where women beneficiate more than men in terms of health from the transitions out of caregiving (hypothesis H4). Comparative results show that the health effects of spousal caregiving appear to be strongest for men and women living in Southern and Eastern European countries, less strong in Western European countries, and smallest in Northern European countries (hypothesis H5). All in all, these results lend support to the idea of a familistic and sub-protective regime characterizing Southern (Bambra, 2007) and Eastern European countries (Mair, 2013).

The study has three important limitations that should be considered for future studies. First, the exact timing of the transitions into or out of care between waves is not known. In other words, spousal caregiving that starts and ends between successive waves is missed altogether. Similarly, no information is available about respondents' caregiving

experiences and health trajectories before their first interview for the SHARE. This implies that previous life course events and trajectories of caregiving and health can be considered only to a very limited extent and we could not fully address the problem of health selection in earlier caregiving history, leaving open other causality-related problems such as the possible bias driven by the "healthy caregiver effect" (Fredman et al., 2015; Roth et al., 2015) or unobserved time-varying heterogeneity (Halaby, 2004). 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, it is important to recognize that what is important for caregivers' health is not only transitioning into caregiving, but also the duration of care. In other words, some caregivers could easily cope with a relative short time of caregiving, but beyond that time it starts to have its negative consequences on individual health. Because we are focusing on caregiving transitions, our approach did not allow us to assess potential cumulative effects of caregiving on health.

Third, even though we excluded bereavement, divorce, and spouse's institutionalisation, we recognize the possibility that other factors can account for the differences between those who continued caregiving and those who stopped providing care to their spouse. A variety of factors, unobserved in our study, could have influenced the individuals' propensity to stop providing care. For example, spouse's health might have improved or external individuals (e.g. other relatives, friends, etc.) provided their support to the caregiver or to his or her spouse. These factors might have different effects on caregivers' health conditions. Our research recommends that future studies should investigate these and other potential pathways.

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 four welfare clusters under analysis. On the contrary, the transitions out of spousal caregiving appear to have no beneficial effect on health in some contexts. 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 and Eastern European countries. At the same time, this might be a direct consequence of the fact that in those less generous welfare states, where care responsibilities are strongly endogenized within the family, women are constrained to provide more intensive forms of informal family caregiving (Bonsang, 2007; Brandt, 2013; Kaschowitz and Brandt, 2017). When women are experiencing their caregiver role as burdensome, in a context in which the outside formal and informal support is scarce, this may lead to health problems due to the higher levels of stress and fewer resources available to cope with it. Exiting from such an intensive caregiving task can then embody a relief. Comparing with the Northern European countries – where low intensity "help" is more common – in the Southern and Eastern European countries the caregiver burden might be so much higher that stopping intensive informal care provides a stronger positive influence on health.

This study highlights the asymmetric and gendered nature of care transitions and the need to account for care trajectories when assessing the impact and consequences of caregiving. A 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.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.socscimed.2019.112517.

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