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EDITORS CHOICE

How to understand informal caregiving patterns in Europe? The role of formal long-term care provisions and family care norms

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Abstract

Aims: Motivated by ageing populations, healthcare policies increasingly emphasize the role of informal care. This study examines how prevalence rates of informal caregivers and intensive caregivers (i.e. those who provide informal care for at least 11 hours a week) vary between European countries, and to what extent informal caregiving and intensive caregiving relate to countries' formal long-term care provisions and family care norms. **Methods:** Multilevel logistic regression analyses on data from the European Social Survey Round 7 ($n = 32,894$ respondents in $n = 19$ countries) were used to test (a) contradicting hypotheses regarding the role of formal long-term care provisions based on crowding-out, crowding-in and specialization arguments and (b) the hypothesis that strong family care norms are positively related to (intensive) informal caregiving. **Results:** Prevalence rates of informal caregiving varied between European countries, from 20% to 44%. Intensive caregiving ranged from 4% to 11%. Opposite patterns regarding the role of formal long-term care provisions were revealed: generous long-term care provisions in a country were related to a higher likelihood of providing informal care, but a lower likelihood of providing intensive care. Moreover, intensive caregiving was more likely when family care norms in a country were strong. **Conclusions:** **This study provided support for the specialization argument by showing that generous formal long-term care provisions crowded-out intensive caregiving, but also encouraged more people to provide (some) informal care. Because especially intensive caregiving is burdensome, low levels of formal long-term care provisions might bring risks to caregivers' well-being and healthcare systems' sustainability.**

Key Words: *Informal caregiving, intensive caregiving, formal care, long-term care, family norms, care norms, ageing, crowding-out, cross-country comparison, European Social Survey*

Introduction

European societies face an increasing demand for care due to an ageing population, increasing life expectancy and chronic illnesses [1]. In response to that, governments are restructuring their healthcare systems to keep them affordable and sustainable. The general tendency is to reduce eligibility to or generosity of state-provided professional long-term care and to increasingly rely on informal care provided by family members, friends, or neighbours [2]. There are several explicit or implicit assumptions behind policy shifts from formal care towards informal care. First, it is often assumed that state support makes

informal care obsolete [3]; welfare generosity 'crowds out' public efforts [4]. Hence, more informal care is to be expected when state support becomes less generous. Second, it is assumed that more emphasis on informal care will eventually alter societal norms towards more family (as opposed to government) responsibility in care provision, so that people will become more inclined to provide informal care [5].

It is not clear whether these assumptions are realistic and, hence, whether reductions in state-provided long-term care are indeed likely to result in more informal care. Some studies argue for the opposite. It

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is suggested that formal long-term care and informal care are complementary, instead of substitutes. More formal long-term care provisions would relieve family members from heavy caregiving tasks, which would facilitate and encourage them to provide care on a voluntary basis [6]. This crowding-in view sees care provisions as a mixed responsibility of state and family [7]. Regarding the impact of norms, a simulation study by Oudijk et al. (2011) [5] showed that the proportion of informal caregivers in the Netherlands—a country in which the provision of care is typically considered a government responsibility—would even decrease, instead of increase, if motivations of the average Dutch person were to be replaced by the motivations of the average southern European. Comparing the amount of informal care between countries that vary on generosity of formal long-term care provisions and on family care norms may shed some light on the tenability of the assumptions behind current policy changes.

Previous research on intergenerational solidarity, more particularly on support provided by adult children to elderly parents, showed opposite north–south gradients in support provisions, thereby providing some evidence for the crowding-in as well as crowding-out view: in Nordic countries, the overall number of children providing support to their parents was found to be higher than in southern European countries; but in southern European countries the *intensity* (i.e. the number of hours) of support provisions was higher than in the north [8–11]. Support could, of course, take several forms (e.g. financial support) and is not necessarily health related. Regarding the provision of personal care, that is, children assisting their elderly parents with eating, dressing, washing and physical activities, the crowding-out view was corroborated with higher prevalence rates in southern European countries than in northern countries, that is, in contexts with low levels of formal long-term care compared with high levels of formal long-term care [12]. The same study, however, showed that personal care provided to parents was also more common in countries where care provisions were primarily considered a family, rather than government, responsibility. Because formal long-term care provisions are likely lower in countries with strong family norms [13], the negative association between formal care provisions and personal care provisions to elderly parents may be spurious. In order to test the impact of both country characteristics simultaneously, data on many countries are needed; something that the previous studies lacked.

Conclusions from studies on intergenerational solidarity cannot be directly transferred to the issue of informal caregiving because their definition of

support importantly deviates from the definition of informal caregiving. First, they refer to intergenerational support only, whereas informal care can be provided to others in one's network as well, for instance to the partner, sibling, or neighbour. Second, several studies' conclusions are based on a set of support types unrelated to informal care provisions, for instance on financial transfers. Third, their focus on older care receivers overemphasizes problems related to old age as the motivation for support, ignoring chronic illnesses and disabilities. Also note that previous studies largely rely on random samples of the older population (aged 50 and over), which discards potential caregivers in other age groups and impedes generalizing prevalence rates to the whole adult population. Therefore, against the background of the increasing need of informal care, studies that more directly measure the concept of informal caregiving are needed to test whether previously found patterns can be replicated. This study will contribute to the literature on informal caregiving by using recent data from the European Social Survey (ESS) Round 7 (2014/2015) with random population samples adopting a more comprehensive definition of informal care [14]. The large number of countries available in the ESS allows examination of the impact of formal long-term care provisions and family care norms simultaneously, while also taking into account country differences in need of care and population compositions. In doing so, this study will inform us about the tenability of the assumptions behind policy changes. Both informal caregiving (yes versus no) as well as intensive caregiving (informal caregiving for at least 11 hours a week versus no or non-intensive caregiving) will be assessed. The research questions to be answered by this study are: (i) How do prevalence rates of informal caregivers and intensive caregivers vary between European countries? (ii) To what extent does informal caregiving and intensive caregiving relate to countries' formal long-term care provisions and family care norms?

Hypotheses

The first country characteristic to be studied as predictor for the likelihood of providing informal care and for the likelihood of providing intensive care (defined as at least 11 hours a week) is generosity of formal long-term care provisions. Theoretical reasoning can be approached from different perspectives. On the one hand, the crowding-out view considers formal and informal care as substitutes. Hence, it argues that generous formal long-term care provisions make informal care unnecessary as care to those with health problems is already taken care of by

professionals [15]. The crowding-out logic leads to the hypothesis that *the likelihood of (intensive) informal caregiving is lower if countries' formal long-term care provisions are more generous*. On the other hand, the crowding-in view predicts that generous state provisions create conditions enhancing public participation by reducing financial or time barriers and by setting an example of caring for others [4]. Moreover, generous state provisions increase resources of those in need, which they can use in exchange relations. This would encourage their network members to provide help [15]. As a result, it is hypothesized that *the likelihood of (intensive) informal caregiving is higher if countries' formal long-term care provisions are more generous*. A third view resolves the conflict between the crowding-in and crowding-out view [6,10]. It argues that state and public take up those tasks in which they are best, implying specialization or functional differentiation [10,16,17]. For instance, if formal care providers focus on medically demanding tasks requiring high levels of expertise, family members can focus on emotional comfort or practical help. The result is an optimal mix of care to those in need. Differentiation in types of tasks has consequences for the *intensity* of care provisions by the family as well. Medically demanding tasks—often in response to problems with activities of daily living (ADL)—are typically time consuming and required on a regular basis; emotional and instrumental support, in contrast, are typically less time consuming, more sporadic and flexible. Hence, generous formal long-term care provisions may crowd-out in one respect (e.g. the time-consuming tasks), but crowd-in in another respect (e.g. helping out, occasionally). This specialization thesis therefore leads to opposite hypotheses: *if countries' formal long-term care provisions are more generous, the likelihood of informal caregiving is higher, but the likelihood of intensive caregiving is lower*.

The second country characteristic refers to the normative climate. Some countries can be characterized by a familialist culture with much emphasis on strong family ties, and willingness and moral obligation to help family members [18,19]. It can be expected that a climate that considers family care to be the norm encourages people to provide informal care, regardless of their personal norms. People are sensitive to positive or negative reactions from their social contexts and are therefore likely to conform to the expectations of their surroundings. Also, those in need may be less reluctant in asking for or accepting help from family members [12]. On top of that, a cultural climate that emphasises help to family members implies that informal caregiving to family members may be perceived as a common thing to do. As a result, becoming an informal caregiver or caring for

many hours a week is not so much a deliberate choice resulting from weighing pros and cons. Potential restrictions, such as time issues or geographical distance, will therefore be less influential, increasing the amount of informal care. This leads to the hypothesis that *the likelihood of (intensive) informal caregiving is higher if family care norms in a country are stronger*.

It is reasonable to expect provision of care to follow need of care [18]. On the individual level, having someone in the personal network in need of care is by far the most important predictor of informal caregiving [12,20]. Countries vary in their populations both with respect to age and health, so the need for care is expectedly higher in the one country than in the other. Need of care will therefore be included in the analyses as well. Note that country differences in the prevalence rates of (intensive) informal caregiving can also be due to differences in the composition of the potential informal caregiver population. Individual-level studies have argued and demonstrated that some groups are more likely to provide informal care than others, such as women, middle-aged persons, non-employed, married, and religious persons (e.g. [20–22]). The distribution of these characteristics varies between countries and may be related to the country characteristics under study. Hence, differences in population composition must be controlled for.

Data and methods

Data

Individual-level information was retrieved from the ESS Round 7 (see [14]). The ESS is a cross-national survey on attitudes, beliefs and behaviour patterns based on random samples of countries' population aged 15 and over resident within private households. For ESS Round 7, the face-to-face interviews were conducted in 2014/2015 in 22 countries. When conducting the current study, data from Latvia were not yet available. Moreover, Israel was removed because of lack of country-level information and Hungary was removed because of its unrealistic proportions of informal caregivers.¹ An age selection of 16 to 80 was applied. Respondents who had a missing value on any of the variables were listwise deleted ($n = 916$; 2.7%). The analysis sample consisted of 32,894 respondents from 19 countries.

Individual-level measurements

Respondents were coded as *informal caregiver* if they answered affirmative to the question whether they spend any time looking after or giving help to family members, friends, neighbours or others because of

Table I. Descriptive statistics on individual-level variables.

	All respondents (n = 32,894)	Caregivers (n = 11,003)	Intensive caregivers (n = 2251)
	%	%	%
Informal caregiver	33.4		
Intensive informal caregiver (11+ h/pw)	6.8	20.5	
Female	52.3	57.0	66.4
Age: 16–19	5.2	4.6	2.9
20–29	13.3	11.5	9.3
30–39	16.1	13.5	13.1
40–49	17.5	17.7	17.2
50–59	18.7	23.5	24.4
60–69	17.7	19.2	21.4
70–79	11.6	10.0	11.7
Partnership status: Married	50.6	53.8	58.2
Cohabiting	8.9	8.1	6.7
Divorced	11.2	12.1	12.7
Widowed	6.4	5.4	6.4
Single	23.0	20.6	15.9
Children in household	36.6	37.7	42.4
Employment status: Full time	43.0	41.7	31.9
Part time	10.1	11.1	8.9
Unemployed	5.8	5.8	7.3
Housework	6.8	8.4	17.6
Retired	22.1	21.6	25.1
Disabled	2.6	2.7	3.4
Other	9.6	8.7	5.7
Hampered in daily activities: No	74.4	71.4	67.9
To some extent	19.7	22.6	23.8
A lot	5.8	5.8	8.3
Education: Low	25.9	24.0	30.1
Medium	50.7	52.1	51.2
High	23.4	23.9	18.7
Religious	54.2	54.7	60.3

Source: European Social Survey, Round 7. h/pw: hours per week.

long-term physical or mental ill health, disability or problems related to old age. Employment-related help was excluded. *Intensive caregiving* was defined as spending 11 hours or more per week on the above-mentioned activities. Intensive caregivers were contrasted to non- and low-intensive caregivers. Note that intensity thus refers to time-intensity and does not capture the type of task performed.

Compositional differences in countries' populations were assessed with respect to eight characteristics that likely relate to the likelihood of informal caregiving. *Sex* was coded 1 for females and 0 for males. *Age* was measured in seven categories to capture the non-linear effect of age on informal caregiving. *Partnership status* referred to actual relationship status and distinguished marriage/legally registered civil union, unmarried cohabitation, divorce, widowhood and singleness. *Children living in the household* was a dichotomous measurement. *Employment status* distinguished between full-time employment (35 hours a week or more), part-time employment (less

than 35 hours a week), unemployment, housework as main activity, retirement, disability and other (such as in education or military service). *Hampered in daily activities* by illness, disability, infirmity or mental problem indicated respondents' health status and was measured in three categories: no, to some extent, and a lot. *Education* was measured in three levels: low (lower secondary or less), medium (upper secondary or advanced vocational qualifications), and high (tertiary education). *Religiosity* was coded 1 for those who considered themselves belonging to a particular religion or denomination and 0 for those who did not. Table 1 shows descriptive information on individual-level variables for the total study sample as well as for informal caregivers and intensive caregivers separately.

Country-level information

Generous formal long-term care provisions were measured by an index combining four indicators of formal

Table II. Descriptive statistics on country-level variables.

		<i>n</i>	Informal caregivers ^a %	Intensive caregivers ^a %	Generosity of formal long-term care provisions	Family care norm	Need for care
Austria	AT	1671	22.0	5.4	-0.36	0.37	12.81
Belgium	BE	1575	38.7	6.2	0.42	0.47	12.05
Czech Republic	CZ	1962	35.0	8.8	-0.62	0.50	12.13
Denmark	DK	1398	43.3	4.7	0.49	0.18	11.89
Estonia	EE	1876	31.5	9.2	-0.55	0.48	13.04
Finland	FI	1922	44.0	4.9	0.18	0.16	12.04
France	FR	1758	38.8	5.9	0.24	0.55	11.79
Germany	DE	2838	35.2	6.2	-0.02	0.39	12.54
Ireland	IE	2140	25.6	8.9	-0.60	0.44	10.80
Lithuania	LT	2064	20.4	6.8	-1.24	0.39	12.53
Netherlands	NL	1781	36.5	6.1	1.30	0.30	11.69
Norway	NO	1354	40.2	3.8	0.76	0.26	12.78
Poland	PL	1494	35.7	8.8	-1.70	0.68	12.57
Portugal	PT	1129	34.4	11.0	-1.41	0.81	12.22
Slovenia	SI	1113	33.1	5.6	-0.03	0.57	13.53
Spain	ES	1745	29.2	9.9	-0.54	0.68	10.82
Sweden	SE	1640	38.8	4.2	1.50	0.29	12.17
Switzerland	CH	1439	38.0	5.0	0.85	0.41	12.42
United Kingdom	UK	1995	30.2	8.6	-0.27	0.37	12.35
Mean			34.24	6.85	-0.08	0.44	12.22
Standard deviation			6.51	2.13	0.87	0.17	0.67
Minimum			20.41	3.75	-1.70	0.16	10.80
Maximum			43.97	10.98	1.50	0.81	13.53

^aProportions weighted by post-stratification weights provided by European Social Survey.

long-term care: (i) long-term care beds in institutions and hospitals per 1000 population aged 65 and over, (ii) long-term care workers per 100 people aged 65 and over, (iii) long-term care public expenditure (health component), as share of GDP and (iv) proportion of population receiving long-term care. Information was retrieved from the Organisation for Economic Co-operation and Development (OECD) (2015) and referred to the year 2013 (or nearest year). The indicators were standardized to make their metrics comparable. As not all countries had valid information for all four indicators, the values of the available standardized items were averaged for each country. Hence, values represented countries' relative position with respect to formal long-term care provisions.

Family care norms represented the normative climate in a country regarding the responsibilities of adult children towards their parents when their parents are in need of long-term care. For each country, the proportion of people choosing the option 'Adult children have the duty to provide long-term care for their parents even at the expense of their own well-being' rather than the option 'Adult children have a life of their own and should not be asked to sacrifice their own well-being for the sake of their parents' was aggregated from the European Values Study 2008 (available at: www.europeanvaluesstudy.eu). Note

that there was no perfect individual-level equivalent of this measurement available in the ESS data to control for composition effects. However, religiosity and educational level likely fulfilled this role.

Need for care in a country was measured by the years of healthy life lost due to disability (per 100,000 population). The number of years of what could have been a healthy life that were instead spent in states of less than full health (for whatever cause) were estimated for each country's population by the World Health Organization in 2012. These absolute numbers were related to 100,000 population. The measurement of years of life lost due to disability was not age-specific, which was in line with this study's definition of informal caregiving, which referred to all forms of caregiving and not solely to older people.²

Table 2 reports for each country the values on the country-level variables alongside the proportions of informal caregivers and intensive caregivers and the number of respondents included in the study sample. In the analyses, country-level variables were *z*-standardized.

Analytical strategy

I estimated random intercept logistic multilevel models with robust standard errors, using the *melogit*

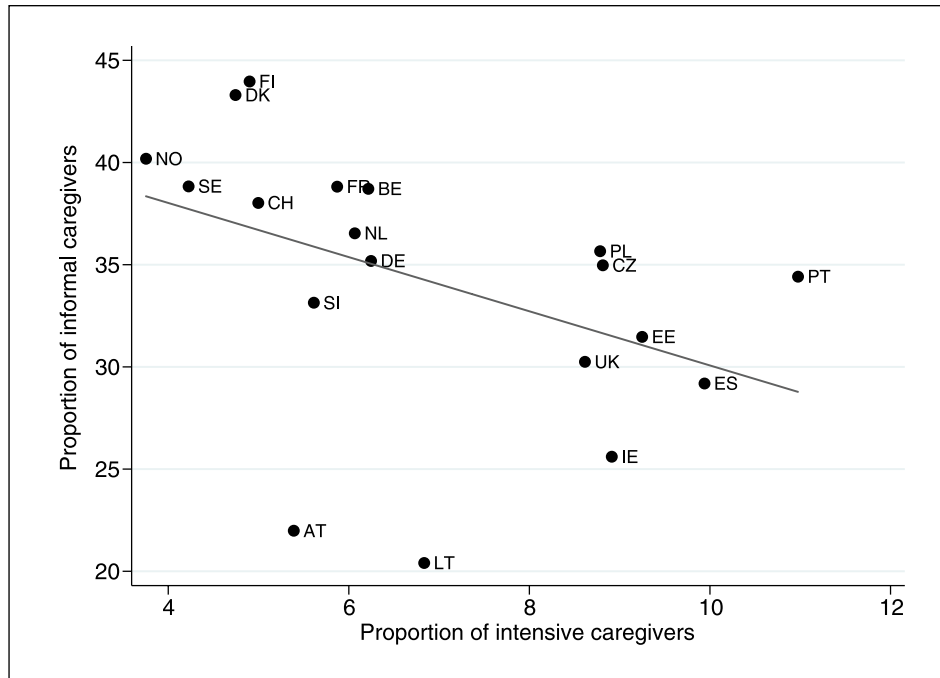


Figure 1. Countries by their proportions of informal and intensive caregivers.

command in Stata14 (StataCorp LP, College Station, US). Multilevel models take into account the nested structure of individuals in countries, thereby restoring the violation of the independence assumption correcting the estimates of the standard errors. The first set of analyses aimed to explain the odds of being an informal caregiver; the second set of analyses considered the odds of being an intensive caregiver. The empty models revealed that the country-level variance was more than two times the standard error, implying that the likelihood of (intensive) informal caregiving varied significantly between countries.³ The intraclass correlation amounted to 3% in both empty models, which indicated that only a small proportion of the variance in the likelihood of being an (intensive) informal caregiver could be attributed to differences between countries.⁴ Models 1, 2 and 3 examined the impact of one country-level predictor at a time, whereas Model 4 included all country-level predictors simultaneously to rule out spuriousness. Note that all models included individual-level variables to control for country differences in population composition. Coefficients were expressed in odds ratios. In order to interpret the size of effects, significant country-level effects were plotted with the help of the margins and marginsplot command in Stata 14.

Results

Table 2 shows that on average, 34% of the populations in the countries in this study provided informal

care. Intensive caregiving is obviously less common; on average, 7% of the countries' populations cared for at least 11 hours a week. These proportions varied substantially. Informal caregiving was most common in Denmark (44%) and least common in Lithuania (20%). Intensive caregiving was most common in Portugal (11%) and least common in Norway (4%). This study's findings mimicked the previously reported opposed north-south divides in care provisions from children to parents [8–10]. As displayed in Figure 1, the Nordic countries were found to have the highest numbers of informal caregivers (see Table 2 for exact values), whereas they also had the lowest numbers of intensive caregivers, that is, those who provide care for at least 11 hours a week. Southern European countries took positions together with Eastern and Anglo-Saxon European countries. The correlation between both measures was negative and significant ($r = -0.49$), suggesting the existence of countries in which a small group takes up a large caring share and countries where many split the care responsibilities in small shares.

Bivariate correlations, reported in Table 3, suggested that generous formal long-term care provisions coincided with higher prevalence of informal caregiving ($r = 0.56$), but with lower prevalence of intensive caregiving ($r = -0.75$). Family care norms were not significantly related to the proportion of informal caregivers, but appeared strongly positively related to the proportion of intensive caregivers ($r = 0.75$). Need of care did not significantly

Table III. Correlations between country variables ($n = 19$).

	(1)	(2)	(3)	(4)
(1) % Informal caregivers	1.00			
(2) % intensive caregivers (11+ hours a week)	-0.49*	1.00		
(3) Generosity of formal long-term care resources	0.56*	-0.75**	1.00	
(4) Strong family norm	-0.32	0.75**	-0.65**	1.00
(5) Years of healthy life lost due to disability (per 100,000 population)	-0.01	-0.30	-0.06	-0.04

* $p < 0.05$; ** $p < 0.01$.

relate to the prevalence of (intensive) caregiving in a country. The correlations presented in Table 3 demonstrate that formal long-term care provisions were less generous in countries with strong family care norms ($r = -0.65$), underlining the importance of controlling the effects of both country-level variables for each other. In the multivariate models, the association between each country characteristic and the individuals' likelihood of being an informal caregiver or intensive caregiver will be controlled for composition effects and, in the final models, for the other country characteristics.

Table 4 shows to what extent the likelihood of being an informal caregiver was associated with country-level characteristics. Model 1 revealed a significant positive association between generous formal long-term care provisions and the likelihood of being an informal caregiver (odds ratio (OR) = 1.22, 95% confidence interval (CI) = 1.05–1.41). No significant associations were found for family care norms in Model 2 (OR = 0.90; 95% CI = 0.81–1.01) or need for care in Model 3 (OR = 0.99; 95% CI = 0.85–1.15). The conclusion regarding generous formal long-term care provisions remained when controlling for the other country-level variables (Model 4: OR = 1.26, 95% CI = 1.03–1.54). Note that these effects were also controlled for potential composition effects regarding sex, age, partnership status, children in the household, employment status, health, education and religiosity. The individual-level relationships showed common results. Informal caregiving was most likely among females and 50–59-year olds. Widowed and cohabiting individuals provided informal care less often than married individuals. Informal caregiving was more common among those reporting housework as the main activity compared with full-time workers and among those who were to some extent hampered in daily activities compared with those who were not. Medium- and higher-educated individuals were found to provide informal care more often than lower-educated persons. Finally, religious individuals were more likely to be informal caregivers than non-religious individuals.

A different picture emerged when assessing the associations between the likelihood of being an

intensive caregiver and country-level characteristics (Table 5). Model 1 showed that generous formal long-term care provisions were significantly negatively related to intensive caregiving (OR = 0.81; 95% CI = 0.74–0.88). In addition, intensive caregiving was significantly more likely in normative climates that prescribe family care (Model 2: OR = 1.24; 95% CI = 1.17–1.32). Need of care, measured by the years of life lost due to disability per 100,000 population, was not related to intensive caregiving (Model 3: OR=0.93; 95% CI = 0.83–1.05). The conclusions regarding formal long-term care provisions and family care norms were unaffected in the full model (Model 4). In addition to the individual-level relationships found with respect to informal caregiving (Table 4), Models 1–4 in Table 5 showed that people with children in the household were more often intensive caregivers. The association with employment status was stronger, with also retired, unemployed and disabled individuals providing intensive care more often than full-timers. Whereas those who were strongly hampered in daily activities were underrepresented in the group of informal caregivers, they were overrepresented in the group of intensive caregivers. Finally, in contrast to the models on informal caregiving, educational level and religiosity were no significant predictors of intensive caregiving.

The results in Tables 4 and 5 appeared robust against (a) influential countries,⁵ (b) modifications in the sample's age selection,⁶ and (c) type of standard errors.⁷

In order to interpret the strength of the associations between generous formal long-term care provisions and family care norms on the one hand, and (intensive) caregiving on the other hand, the upper panel of Figure 2 plots the marginal predicted probabilities of (intensive) caregiving for the average level of long-term care provisions (value 0), as well as for one and two standard deviations below and above the mean. Calculations were based on Model 4 and kept all other values at their means. Figure 2 clearly shows the contrasting finding for the two dependent variables. It was predicted that in countries with 2 standard deviations (SDs) fewer long-term care provisions

Table IV. Logistic multilevel analysis on informal caregiving.

	Model 1			Model 2			Model 3			Model 4		
	OR	95%	CI	OR	95%	CI	OR	95%	CI	OR	95%	CI
Individual level												
Intercept	0.48**	0.41	0.56	0.48**	0.40	0.57	0.48**	0.40	0.58	0.48**	0.41	0.56
Female	1.31**	1.22	1.41	1.31**	1.22	1.41	1.31**	1.22	1.41	1.31**	1.22	1.41
Age (ref = 50–59)												
16–19	0.64**	0.54	0.76	0.64**	0.54	0.76	0.64**	0.54	0.76	0.64**	0.54	0.76
20–29	0.56**	0.47	0.66	0.56**	0.47	0.66	0.56**	0.47	0.66	0.56**	0.47	0.66
30–39	0.53**	0.48	0.58	0.53**	0.48	0.58	0.53**	0.48	0.58	0.53**	0.48	0.58
40–49	0.70**	0.63	0.76	0.70**	0.63	0.76	0.70**	0.63	0.76	0.70**	0.63	0.76
60–69	0.77**	0.72	0.83	0.77**	0.72	0.83	0.77**	0.72	0.83	0.77**	0.72	0.83
70–79	0.59**	0.52	0.67	0.59**	0.52	0.67	0.59**	0.53	0.67	0.59**	0.52	0.67
Partnership status (ref = married)												
Cohabiting	0.91*	0.83	1.00	0.91*	0.83	1.00	0.91*	0.83	1.00	0.91*	0.83	1.00
Divorced	0.99	0.92	1.06	0.99	0.92	1.06	0.99	0.92	1.06	0.99	0.92	1.06
Widowed	0.76**	0.68	0.85	0.76**	0.68	0.85	0.76**	0.68	0.85	0.76**	0.68	0.85
Single	0.97	0.91	1.04	0.97	0.91	1.04	0.97	0.91	1.04	0.97	0.91	1.04
Children in household	1.02	0.94	1.11	1.02	0.94	1.11	1.02	0.94	1.11	1.02	0.94	1.11
Employment status (ref = full time)												
Part time	1.06	0.96	1.17	1.07	0.97	1.17	1.07	0.97	1.18	1.06	0.96	1.17
Unemployed	1.12	0.98	1.29	1.12	0.98	1.29	1.12	0.98	1.29	1.12	0.98	1.29
Housework	1.49**	1.30	1.70	1.49**	1.31	1.70	1.49**	1.31	1.70	1.49**	1.30	1.70
Retired	1.02	0.93	1.12	1.02	0.93	1.12	1.02	0.93	1.12	1.02	0.93	1.12
Disabled	0.94	0.81	1.08	0.94	0.82	1.08	0.94	0.82	1.08	0.94	0.81	1.07
Other	1.06	0.93	1.20	1.06	0.93	1.20	1.06	0.93	1.20	1.06	0.93	1.20
Hampered in daily activities (ref = no)												
To some extent	1.27**	1.19	1.35	1.27**	1.19	1.35	1.27**	1.19	1.36	1.27**	1.19	1.36
A lot	1.05	0.96	1.15	1.05	0.96	1.15	1.05	0.96	1.15	1.05	0.96	1.15
Education (ref = low)												
Medium	1.18**	1.11	1.26	1.18**	1.11	1.26	1.18**	1.11	1.26	1.18**	1.11	1.26
High	1.17**	1.07	1.27	1.17**	1.07	1.27	1.17**	1.07	1.27	1.17**	1.07	1.27
Religious	1.14**	1.05	1.23	1.13**	1.05	1.22	1.13**	1.05	1.22	1.14**	1.05	1.23
Country level												
Generous formal long-term care provisions (standard)	1.22**	1.05	1.41							1.26*	1.03	1.54
Family care norm (standard)				0.90	0.81	1.01				1.05	0.84	1.31
Need for care (standard)							0.99	0.85	1.15	1.00	0.90	1.12
	est	se		est	se		est	se		est	se	
Variance country level	0.073	0.024		0.101	0.043		0.110	0.040		0.072	0.022	

* $p < 0.05$; ** $p < 0.01$.

OR: odds ratio; CI: confidence interval; est: estimate; se: standard error.

Source: European Social Survey, Round 7 ($n = 32,894$ respondents in $n = 19$ countries).

than average, 24% of the population provided informal care. This proportion went up to as high as 44% for countries with formal long-term care provisions 2 SDs above the mean. The opposite pattern was observed for intensive caregiving. Intensive caregiving was estimated to be done by 7.6% of the population in countries with formal long-term care provisions 2 SDs below average versus 4.5% of the population in countries with a value of 2 SDs above average. This implied that intensive caregiving was only 60% as likely in the most, compared with the least, generous countries. The descriptive pattern displayed in Figure 1 coincided with the pattern for formal long-term care provisions, even when controlled

for family care norms. The bottom panel of Figure 2 demonstrates that the predicted probability of intensive caregiving varied from 4.7% in countries with very weak family care norms (i.e. $-2SD$) to 7.5% in countries with very strong family care norms (i.e. $+2SD$). Again, these predictions were controlled for other country variables, as well as composition effects and were calculated with all other variables kept at their mean.

Conclusion and discussion

Contemporary Western societies face an increasing demand for care. Governments respond to that by

Table V. Logistic multilevel analysis on intensive caregiving.

	Model 1			Model 2			Model 3			Model 4		
	or	95%	CI	or	95%	CI	or	95%	CI	or	95%	CI
Individual level												
Intercept	0.05**	0.04	0.06	0.05**	0.04	0.06	0.05**	0.04	0.06	0.05**	0.04	0.06
Female	1.58**	1.39	1.79	1.58**	1.39	1.80	1.58**	1.40	1.80	1.58**	1.39	1.80
Age (ref = 50–59)												
16–19	0.55**	0.37	0.82	0.56**	0.37	0.83	0.55**	0.37	0.82	0.56**	0.37	0.83
20–29	0.59**	0.43	0.82	0.60**	0.43	0.82	0.60**	0.43	0.82	0.60**	0.43	0.82
30–39	0.58**	0.50	0.67	0.58**	0.50	0.67	0.58**	0.50	0.67	0.58**	0.50	0.67
40–49	0.73**	0.62	0.87	0.74**	0.62	0.87	0.73**	0.62	0.87	0.73**	0.62	0.87
60–69	0.76**	0.63	0.91	0.75**	0.63	0.90	0.75**	0.63	0.90	0.76**	0.63	0.91
70–79	0.58**	0.44	0.77	0.58**	0.44	0.76	0.57**	0.43	0.76	0.58**	0.44	0.77
Partnership status (ref = married)												
Cohabiting	0.88*	0.78	0.99	0.88*	0.78	0.99	0.87*	0.77	0.99	0.88*	0.78	0.99
Divorced	1.01	0.85	1.21	1.02	0.85	1.21	1.01	0.85	1.21	1.02	0.85	1.21
Widowed	0.68**	0.53	0.86	0.68**	0.53	0.87	0.68**	0.53	0.87	0.68**	0.53	0.87
Single	0.88	0.75	1.03	0.88	0.74	1.03	0.88	0.74	1.03	0.87	0.74	1.03
Children in household	1.17*	1.04	1.32	1.17*	1.03	1.31	1.17**	1.04	1.32	1.17*	1.03	1.32
Employment status (ref = full time)												
Part time	1.08	0.88	1.31	1.07	0.88	1.30	1.06	0.87	1.29	1.07	0.89	1.30
Unemployed	1.71**	1.46	2.01	1.70**	1.45	1.99	1.70**	1.45	2.00	1.69**	1.44	1.99
Housework	3.13**	2.71	3.63	3.12**	2.70	3.61	3.11**	2.68	3.61	3.11**	2.68	3.62
Retired	1.66**	1.36	2.01	1.66**	1.37	2.02	1.67**	1.37	2.03	1.66**	1.37	2.02
Disabled	1.36*	1.04	1.79	1.36*	1.04	1.77	1.34*	1.03	1.76	1.36*	1.04	1.78
Other	1.13	0.85	1.51	1.12	0.84	1.50	1.12	0.84	1.50	1.12	0.84	1.50
Hampered in daily activities (ref = no)												
To some extent	1.23*	1.03	1.47	1.24*	1.04	1.47	1.23*	1.04	1.47	1.24*	1.04	1.47
A lot	1.33**	1.11	1.59	1.34**	1.12	1.60	1.34**	1.12	1.60	1.34**	1.13	1.60
Education (ref = low)												
Medium	1.03	0.92	1.16	1.05	0.93	1.18	1.04	0.92	1.17	1.05	0.94	1.18
High	0.88	0.76	1.01	0.89	0.77	1.02	0.88	0.76	1.01	0.89	0.77	1.03
Religious	1.11	0.98	1.25	1.12	0.99	1.26	1.13*	1.00	1.28	1.10	0.96	1.25
Country level												
Generous formal long-term care provisions (standard)	0.81**	0.74	0.88							0.87**	0.80	0.95
Family care norm (standard)				1.24**	1.17	1.32				1.13**	1.05	1.22
Need for care (standard)							0.93	0.83	1.05	0.93	0.86	1.01
	est	se		est	se		est	se		est	se	
Variance country level	0.032	0.010		0.031	0.012		0.069	0.019		0.019	0.012	

* $p < 0.05$; ** $p < 0.01$.

est: estimate; se: standard error.

Source: European Social Survey, Round 7 ($n = 32,894$ respondents in $n = 19$ countries).

restructuring their healthcare systems in which they more strongly rely on informal care. Implicit assumptions behind these policy shifts are that reductions in formal long-term care provisions will be compensated by increased informal care and that the policy message of the importance of informal care will eventually be incorporated in general norms towards caring responsibilities. This study took a country-comparative approach, conducting logistic multilevel regression analyses on data from the European Social Survey Round 7 ($n = 32,894$ in $n = 19$ countries), to find out (i) how prevalence rates of informal caregivers and intensive caregivers varied between European countries, and (ii) to what extent informal caregiving

and intensive caregiving were related to countries' formal long-term care provisions and family care norms.

This study showed that prevalence rates of informal caregiving varied substantially between European countries, with proportions as low as 20%, to as high as 44%. Informal caregiving for at least 11 hours a week (i.e. intensive caregiving) was obviously less prevalent, and ranged from 4% to 11%. The data showed opposing patterns regarding the prevalence of informal caregivers and the prevalence of intensive caregivers. The Nordic countries had relatively many caregivers, but few intensive caregivers. A mixed group of countries in South, East, and Anglo-Saxon

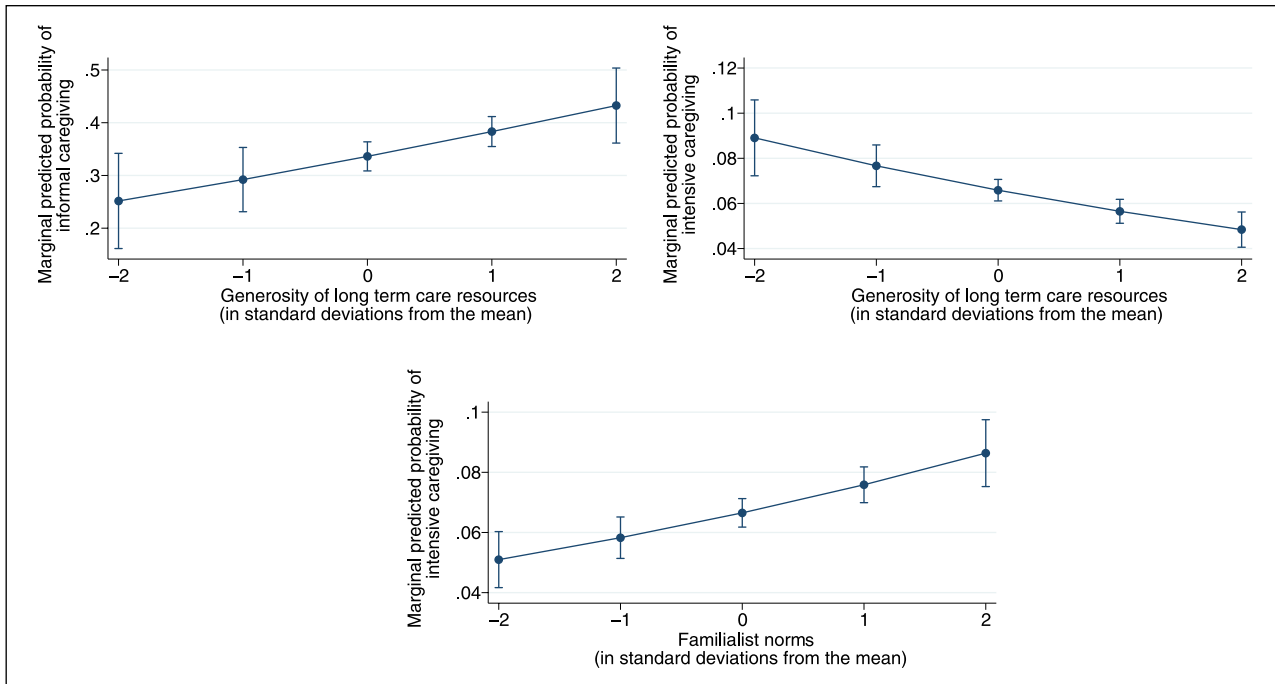


Figure 2. Marginal predicted probabilities of generosity of long-term care provisions and family care norms on (intensive) informal caregiving.^a

^aOther variables kept at their mean.

x-axis is in standard deviations from the mean; y-axis are probabilities.

Europe had relatively few caregivers, but many intensive caregivers. Regarding the second question, individuals were found to be more likely to provide informal care in countries with generous long-term care provisions, while the likelihood of intensive caregiving was lower in these countries. This result could be interpreted as evidence for the specialization thesis and is in line with studies on intergenerational support. In contrast with previous studies, family care norms were not found to be related to the likelihood of informal caregiving. However, the expected relationship was found with respect to intensive caregiving: intensive caregiving was positively related to family care norms. Note that this conclusion was independent of countries' healthcare generosity: formal long-term care provisions and family care norms had independent, additive effects.

Considering the assumptions behind current-day policy shifts, these conclusions provided evidence for the idea that fewer formal long-term care provisions go together with higher proportions of intensive caregivers. But, a more nuanced response is needed. These results not only supported the crowding-out view; less generosity of formal long-term care provisions was also related to fewer informal caregivers in total. Since especially *intensive* caregiving is burdensome, [25–27] low levels of formal long-term care provisions might bring risks. Overtaxed informal

caregivers may provide lower-quality care, may drop-out as caregivers, and may even become in need of care themselves. Therefore, a situation in which 'many caregivers do a little each' may be a more sustainable situation for the healthcare system. This study's results suggested that such a situation is most common in countries with generous formal long-term care provisions. Regarding the second assumption, the conclusions of this study could not confirm a relationship between family care norms and informal caregiving, though family care norms did go together with more intensive caregivers. Hence, based on this study, evidence of the relation between care norms and informal caregiving applied to intensive caregiving only.

An important disclaimer to the implications above is that this study was not able to prove causal relationships; conclusions refer to associations only. Longitudinal data are needed to detect causalities between changes in contexts and changes in informal caregiving. An advantage of this study was that in comparison to many intergenerational solidarity studies, ESS allowed to more strictly focus on informal caregiving. Nevertheless, information about the caregiving situation other than intensity was lacking. As a result, intensity of caregiving referred to time-intensity only. Time is a relevant element, as time devoted to informal care competes with time for employment, household work, childcare and leisure.

However, with the societal implications of burdened informal caregivers in mind, it is highly relevant to know whether types of tasks, severity of care recipients' health problems and relationship types (i.e. is care provided to parent, partner, neighbour, etc.) also vary along the range of formal long-term care provisions and family care norms. Another advantage of this study was that it could simultaneously include institutional and cultural characteristics in the multi-level models in order to test for spuriousness. Nevertheless, it must be noted that the number of countries available for study was still relatively small. A final limitation of this cross-country comparison is that cultural differences may exist in the meaning of informal caregiving, implying that in some contexts—for instance, countries with strong family care norms—people providing informal care may not label themselves as such. However, the question formulation carefully not included the term 'informal caregiver' but described an informal caregiving situation in objective terms.

This study's key result is that low levels of formal long-term care provisions were not simply compensated by high levels of informal care. In contrast, high numbers of people providing care to network members in need of care due to health issues were found in countries with generous formal long-term care provisions.

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Notes

1. Prevalence rate of informal caregivers in Hungary was 8%. This number deviated enormously from other sources that reported 21% caregivers based on the European Quality of Life Survey 2007[13].
2. Note that imperfect health does not equal need of care. However, the same applies to an alternative measure, such as the proportion of older people. Moreover, a high proportion of older people could actually signal high national health levels—and thus low need of care—since good health may be a reason for high life expectancies; it is therefore a less desirable indicator for need of care.

3. Informal caregiving: country-level variance = 0.096 with standard error = 0.034; intensive caregiving: country-level variance = 0.097 with standard error = 0.024 (results from empty models; not shown in table).
4. The intraclass correlation in a logistic multi-level model can be calculated as: country-level variance in intercept / (country-level variance in intercept + $\pi^2/3$) [23]. Here: $0.096 / (0.096 + 3.29) = 0.028$ for informal caregiving and $0.097 / (0.097 + 3.29) = 0.029$ for intensive caregiving. Note that in logistic multilevel models, explained variance cannot be derived from comparing the country-level variance of a model including a predictor with the country-level variance of a model excluding the predictor [24].
5. Influential countries were detected with DFbetas (a measure of how much a particular country has effected the estimate of a regression coefficient). This was done by running Model 4, leaving out one country at the time. For each country and each country characteristic, DFbeta was calculated by the difference between the b coefficient in the full model and the b coefficient in the model without the particular country, divided by the standard error of this coefficient in the smaller sample. If DFbeta was larger than the critical value ($1 / \sqrt{n}$), a country was labelled influential. For each country characteristic, Model 4 was run without these influential countries; the number of influential countries varied between 0 and 3. Conclusions concerning the role of country characteristics were not altered.
6. Robustness checks were done on a sample of 20–70-year olds.
7. As robust standard errors may not work well in small samples (here, 19 countries), normal standard errors were used in a robustness test.

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