

## Socio-demographic determinants of informal caregiving: co-resident versus extra-resident care

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**Abstract** This article adds to the literature on the ‘supply side’ of informal care, by examining the socio-demographic determinants of co-resident and extra-resident informal caregiving. Results from the population survey “Care in Flanders” ( $N = 2826$ ), provide evidence for a different relationship between socio-demographic characteristics and informal caregiving, according to the location of care. Women, persons living without children and married (vs. unmarried) persons are more likely to be involved in extra-resident care. Involvement in co-resident care on the other hand, is more common among persons in less good health and sharing a household with someone other than a spouse or child, mostly a parent. The relationship between socio-demographic factors and care intensity is not uniform as well: while younger age and having no paid work are related to more intensive caregiving within the household, this is not the case among extra-resident caregivers. Results may be explained by the fact of some groups having more/less access to “legitimate excuses” for providing less extra-resident care, unequal risks of being confronted with (higher) care needs, as well as selection effects. Overall, our results were weak, pointing to the weakness of a strictly supply based approach in order to predict evolutions in informal care. Future studies should be aware of the differences between co-resident and extra-resident caregiving, taking into

account factors from a supply as well as a demand perspective.

**Keywords** Informal caregiving · Determinants · Living arrangements · Belgium

### Introduction

Informal caregiving is a matter of growing concern for both scientists and policy makers. On the one hand, the concern is raised by the changing age structure of European populations: increasing numbers of very old persons imply growing care needs. Since budget constraints limit the expansion of public services, these care needs cannot be supported by the state alone (European Foundation for the Improvement of Living and Working Conditions 2004). On the other hand, it is expected that social changes such as the growing labor force participation of women and altering family structures, will have a negative impact on the availability and willingness of family members, neighbors and friends to provide informal care (e.g., Allen and Perkins 1995; Mestheneos and Triantafillou 2005; Pickard et al. 2000; Salvage 1995).

All over Europe and abroad, prospective studies have been carried out in order to gain a better understanding of the impact of these evolutions on formal and informal care. Although some studies mainly explore future trends (Salvage 1995; Vollenga et al. 2001), others go one step further by developing models of long-term care that quantify the effects of these evolutions on, e.g., future care use, care expenditure and the future supply of informal care (Comas-Herrera and Wittenberg 2003; Jenkins et al. 2003; Johnson et al. 2007; OPM 2006; Pickard et al. 2000; Pickard 2008; Timmermans and Sadiraj 2007). From the point of

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view of policy makers, the latter are especially relevant because they can be used to inform decisions on planning and policy changes.

When it comes to informal care, models of long-term care tend to be either essentially demand-led or supply-led (Wittenberg et al. 1998, p. 31). According to Wittenberg et al. 1998, models that focus on the demand side of informal care, are mainly concerned with the future evolutions in dependency and the impact on care needs. It is implicitly assumed that informal care provided will rise in line with the numbers of people with varying degrees of disability. Models that are supply-led, on the other hand, suppose that the amount of informal care given will change in proportion with the numbers of potential carers. In this case, the amount of care supplied by sub-groups of the population, defined in terms of socio-demographic characteristics like age, sex, marital status, labor participation, education, ... is taken as a starting point and projections are made on the basis of trends in the distribution of these characteristics (Jenkins et al. 2003; Richards et al. 1996; Timmermans and Woittiez 2005; Timmermans and Sadiraj 2007).

This study adds to the literature on the ‘supply side’ of informal care, by extending knowledge on the socio-demographic determinants of caregiving for a person living in the same household (co-resident care) and caregiving for a person living in another household (extra-resident care). As we recognize that informal caregiving is a complex process, in which capabilities and norms of the informal carer as well as characteristics of the care receiver play a role (Finch and Mason 1993; Silverstein et al. 2006), this article does not aim to give a full account of the determinants of informal caregiving. Rather, by investigating how socio-demographic characteristics of the (potential) caregiver are related to co-resident and extra-resident caregiving, we want to study the usefulness of these factors to project the future supply of informal care. If it turns out that the impact of the socio-demographic determinants varies according to the location of caregiving, this means future studies must account for this diversity.

The research questions addressed are the following: (1) Which socio-demographic factors determine involvement in co-resident and extra-resident caregiving? (2) Which socio-demographic factors determine the intensity of co-resident and extra-resident caregiving? (3) Does the impact of the socio-demographic determinants on care involvement and care intensity differ according to the location of care?

While most studies on informal caregiving do not differentiate between care for a person living in the same household and care for someone living in another household, both empirical and theoretical arguments support the notion of a different dynamic of co-resident and

extra-resident caregiving. A bulk of studies have reported that care given to a household member is more intensive than care given to a person living in another household, whether it is measured in terms of hours of caregiving or in terms of the type and frequency of care tasks that are performed (Arber and Ginn 1995; Campbell and Martin-Matthews 2000; Heylen and Mortelmans 2006a). In order to better understand why co-residence was linked to more non-traditional filial caregiving among men, Campbell and Martin-Matthews (2000) use the concept of “legitimate excuses”, which was introduced by Finch and Mason (1993). According to Finch and Mason, there is a variety of grounds on which someone can establish that he or she is unable to provide help or care for a relative. Employment, other family commitments, lack of competence, distance and lack of resources may be used as “legitimate excuses” for not providing care or giving less intensive care.<sup>1</sup> Obviously, persons who co-reside do not have the “excuse” of distance to justify a lack of involvement. Besides, “co-residing may diminish the legitimacy of other competing obligations or commitments” (Campbell and Martin-Matthews 2000, p. 1017). In a study on caregiving and employment, Arber and Ginn (1995) argue that caregiving to a household member is more obligatory than caregiving for a person living in another household. As a result, the potential caregiver’s employment status is unlikely to influence whether he/she takes on the caring role and the nature of care that is provided, if a household member is in need of care. When a person living in another household is in need of care, there is more likely to be an element of choice, and employment may decrease or remove caregiving obligations.

The concepts of “obligation versus choice” and “legitimate excuses” provide a useful framework for the study of the socio-demographic determinants of informal caregiving inside and outside the household. It can be argued that due to the more obligatory character of co-resident care, reasons for not getting involved in (intensive) caregiving will not (easily) be accepted as “legitimate” if the person in need of care is a member of the household. Moreover, as household members tend to be highly committed, they may not even try to invoke “legitimate excuses” for not providing care (Finch and Mason 1993). As a result, it is hypothesized that involvement in co-resident care and the intensity of co-resident caregiving will be not related to the

<sup>1</sup> Finch and Mason (1993) emphasize that the legitimacy of an excuse is not a straightforward outcome either of what the excuse is, or of who is making the excuse. Whether an excuse is accepted as legitimate or not, is the product of a negotiating process. In this article, we will use the term ‘legitimate excuse’, even though we have no information on whether the other parties involved accept this legitimacy. However, we think it is a useful concept, as it signifies the variety of reasons to justify lower care involvement.

socio-demographic characteristics of the informal carer. On the other hand, if the person in need of care is living somewhere else, having paid work, being in a poorer health and having family commitments, may be related to less care involvement and a lower intensity of caregiving.

Gender, age and educational level are not “legitimate excuses” themselves. However, Finch and Mason (1993) illustrate that men, compared to women, are more likely to claim not being able to care and also to get these “excuses” accepted. Especially when it comes to having the skills to provide personal care, a gender dimension is involved. With regard to age, it may be hypothesized that persons in the earlier stages of adulthood will be more likely to give priority to other aspects of life (e.g., employment) and to get this accepted, compared to older persons. As educational level is concerned, there is evidence that higher educated persons live further away from their parents (Shelton and Grundy 2000; Kalmijn 2006), which means they have more access to the “legitimate excuse” of distance not to get involved in care. Following from this, we expect that men, younger persons and higher educated persons will be less involved in extra-resident caregiving and that if they do provide extra-resident care, caregiving will be less intensive. In the case of co-resident care, involvement in care and intensity of caregiving are expected not to be related to gender, age and educational level.

## Methods

### Sample

The data used in this article stem from a representative survey of persons, aged 25–64, living in Flanders (Belgium). The postal survey “Care in Flanders” was carried out in 2003 as part of a conference on care. The questionnaire contains a battery of questions on actual informal caregiving, as well as questions on the willingness to provide care, on care receiving and on policy initiatives to promote informal caregiving. Since the Minister of Well-being and Health, who commissioned the survey, was especially interested in the combination of work and care, this topic also got special attention. As the survey is based on a representative population sample, it is fit to test hypotheses on the determinants of informal caregiving (Jacobs et al. 2005). However, due to the age limits, the data are not able to give an overall view of the informal care capacity: informal care given by older persons (e.g., spouses of the oldest old) and by children/adolescents is not included.

The sampling was based on population register data, using a proportional stratification, in which province,

degree of urbanization, sex and year of birth were taken into account. The net-response rate of the survey was reasonably high (71%), resulting in a representative sample of 2826 individuals living in Flanders and having the Belgian nationality (Jacobs and Lodewijckx 2004). In the analyses for this article, persons with missing data on caregiving or on the location of care (inside or outside the household) are excluded from all analyses ( $N = 267$ ). In the multivariate analyses, persons with missing information on one of the socio-demographic determinants are omitted as well ( $N = 98$ ). When studying the intensity of caregiving, informal carers with missing information on the frequency of at least one care task, are furthermore left out ( $N = 77$ ). On the whole, respondents excluded from the analyses are more often female, older, lower educated, less frequently involved in paid work and in less good health. They are also less often living with children and more frequently living with a person who is not their partner or child, than respondents who are retained in the analyses.

### Measures

#### *Dependent variables*

When studying the determinants of informal caregiving, a crucial element is how informal care is being measured. In the survey “Care in Flanders” a task based, retrospective approach is used. The survey gathers information on the performance of 19 care-tasks during the past year, on behalf of persons who are in need of care for at least 1 month, because of illness, disability or another reason (not job related and not in the context of an organization for volunteers). Three broad types of care-tasks are encompassed: socio-emotional care (companioning to the doctor, listening to problems,...), housekeeping (cleaning, doing the laundry, helping with paperwork,...) and personal care (helping with eating, giving medicines,...). Special attention was given not to exclude ‘male specific’ care activities. For each task the respondents were asked whether they had done this in the past year (yes–no) and if yes, how frequent (once or more times a week, once or more times a month and once or more times during the last 12 months) and what was their relationship to the person they helped the most (member of the household, relative not co-residing and friend/neighbor/acquaintance).

Since informal caregiving, in common language, as well as from a policy perspective, implies a rather intensive type of caregiving, the Population and Family Study Centre created a standard to distinguish intensive informal carers from persons providing care-tasks on a more occasional basis (Craeynest and Vanbrabant 2004). According to this standard, persons who provided four or more socio-emotional care tasks in the past year, in combination with four

or more housekeeping tasks, are considered to be an informal carer. The same holds for persons who provided at least two personal care tasks. This operationalization of an informal carer is based on the range of tasks performed by most registered informal carers in a parallel survey, named “Informal care in Flanders”. This survey was carried out in the same period among persons aged 25–79, who were registered by the Flemish Care Insurance scheme as informal carers of highly disabled persons. Since this operationalization has proved to be appropriate (Heylen and Mortelmans 2006a; Jacobs and Lodewijckx 2004), it is used to measure involvement in informal care in this article. Persons who comply with this standard are considered to be an informal carer.

In order to examine the determinants of the amount of informal care given, among the informal carers, a measure of intensity was constructed. The intensity of informal caregiving is measured by the sum of the frequencies of all tasks (max: 19) performed. As frequency scores for each care task range from 1 till 3 (1: once or more times a year, 2: once or more times a month, 3: once or more times a week) and informal carers had to give at least two care tasks, scores could range from 2 (lowest intensity) till 57 (highest intensity).

For each care task, it is known whether the care recipient is a member of the household or a person living elsewhere. In this study, informal carers providing care tasks only for member/members of the household are considered to be co-resident carers, while persons providing care merely to someone living in another household are extra-resident carers. People who provide care tasks both inside and outside the household constitute a third category of ‘combining carers’. Respondents not meeting the criteria of an informal carer are called non-carers (even though they may provide some informal care tasks).

### *Independent variables*

Socio-demographic characteristics of the (potential) caregiver included in the analyses are gender, age, educational level [low ( $\leq$  lower secondary), middle (higher secondary), high (university or college of higher education)], employment status (no paid work, part-time work, full-time work) and subjective health [less than good, (very) good]. Also included in the analyses are three characteristics of the living arrangement: the fact whether one lives together with a child (yes–no), the fact of living together with someone who is not the partner or child<sup>2</sup> (yes–no), and marital status (married- unmarried- divorced/widowed). While in the case of co-resident care, these characteristics

draw the setting in which care takes place, in the case of extra-resident care they may reflect family commitments that prevent someone to get involved in (intensive) caregiving.

### Analyses

The analyses follow a two-step procedure. First, the determinants of involvement in co-resident and extra-resident caregiving are examined. For this purpose, chances of being a co-resident carer, an extra-resident carer and a combining carer are studied for each socio-demographic group. In the descriptive part, results are obtained by cross-tabulations and chi-square statistics. In order to test the impact of the socio-demographic characteristics controlling for the other variables, a multinomial logistic regression analysis is carried out in which the three types of carers are contrasted with non-carers.

Secondly, the impact of the socio-demographic determinants on the intensity of caregiving is tested within the subgroups of co-resident, extra-resident and combining carers. Since the measure for the intensity of caregiving is a continuous variable, descriptive results are obtained by *F* tests comparing means between the socio-demographic groups. In the multivariate part, three separate linear regression analyses are carried out with the socio-demographic characteristics as independent variables. Moreover, co-resident and extra-resident carers are combined in a regression analysis, in which interaction effects of the location of care and the socio-demographic determinants are tested.

## Results

### Descriptive results

#### *Involvement in extra-resident and in co-resident care*

Almost one in five respondents (19%) was involved in informal caregiving during the year before the interview (Table 1). Care is twice as often given (only) to a person living in another household than (only) to a household member. All socio-demographic characteristics are related to care involvement, although the relationship with age and marital status is only significant at the 0.10 level.

Descriptive results show that men are less involved in extra-resident caregiving than women, while about the same proportions of men and women give co-resident care or combine co-resident and extra-resident care. The highest proportion of co-resident carers is found among persons between 55 and 64 years old, persons between 45 and 54 are most likely to be an extra-resident carer.

<sup>2</sup> In most cases, this ‘other’ person is a parent (72%), or another family member (26%).

**Table 1** Co-resident and extra-resident informal care involvement, by socio-demographic characteristics (%)

	Co-resident carer	Extra-resident carer	Combining carer	Non-carer	Total (N = 100%)
Gender***					
Men	5.6	6.0	3.8	84.5	1,224
Women	4.5	13.1	4.3	78.1	1,335
Age (+)					
25–34	4.4	7.0	4.2	84.4	589
35–44	4.1	9.9	3.9	82.2	779
45–54	5.0	11.4	3.9	79.7	695
55–64	7.3	10.5	4.4	77.8	496
Educational level*					
Low	6.9	9.1	4.3	79.7	859
Middle	4.5	10.7	4.6	80.1	820
High	3.4	9.5	3.1	84.0	845
Employment status**					
No paid work	7.1	11.1	5.0	76.9	765
Part-time employed	3.4	11.1	5.1	80.5	415
Full-time employed	4.4	8.5	3.3	83.7	1,359
Subjective health***					
<Good	8.8	9.0	7.3	74.9	398
(Very) good	4.4	9.8	3.5	82.3	2,157
Living with child(ren)*					
No	6.4	10.5	3.9	79.3	1,051
Yes	3.9	9.2	4.1	82.8	1,496
Living with other person than child(ren)/partner***					
No	4.3	9.8	3.6	82.3	2,348
Yes	13.6	9.2	9.2	68.0	206
Marital status (+)					
Married	4.5	10.3	4.1	81.1	1,835
Unmarried	7.2	6.7	4.6	81.4	431
Divorced/widowed	5.5	10.3	2.7	81.4	291
All	5.0	9.7	4.1	81.2	2,559

Source: “Care in Flanders”, CBGS, 2003

Chi<sup>2</sup> test; \*  $p < 0.05$ ,

\*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ ,

(+)  $p < 0.10$

With regard to educational level, it is found that involvement in extra-resident care is highest in the middle group, while co-resident care is most often given by the lower educated. Persons who are full-time employed are most likely to be non-carers. While co-resident care involvement is highest among people without paid work, both persons without paid work and persons working part-time are more often involved in extra-resident care. With respect to subjective health, it is found that people in less good health are more frequently involved in co-resident care or combine co-resident and extra-resident caregiving.

As concerns characteristics of the living arrangement, the proportion of ‘non-carers’ is higher among persons who live with a child, and lower among persons sharing the household with someone who is not their partner or child (mostly a parent). These differences are mainly due to co-resident caregiving: while the first group does less

frequently provide care inside the household, living with a parent or another person who is not the partner or a child, is associated with a higher involvement in co-resident and combined care. There is a tendency for the unmarried to be more frequently involved in co-resident care, and less frequently involved in extra-resident care compared to widowed/divorced and married persons.

#### *Intensity of extra-resident and co-resident care*

In order to study the determinants of the intensity of care provided by co-resident, extra-resident and combining carers, the association with the socio-demographic characteristics is tested within each group. Table 2 gives an overview of the mean scores of intensity by these characteristics, for the three types of carers.

Among co-resident carers, the only variable related to the amount of care given is the presence of a person who is

**Table 2** Intensity of care provided by extra-resident, co-resident and combining carers, by socio-demographic characteristics (sum score of intensity-means)

	Co-resident carers	Extra-resident carers	Combining carers
Gender	NS	NS	NS
Men	30.6	24.8	29.0
Women	33.4	23.2	27.8
Age	NS	*	NS
25–34	34.7	20.1	27.0
35–44	32.7	23.0	27.5
45–54	33.8	25.7	29.6
55–64	26.9	24.6	30.1
Educational level	NS	NS	NS
Low	29.2	25.3	30.5
Middle	33.6	23.8	26.2
High	34.3	22.0	29.4
Employment status	NS	NS	NS
No paid work	33.5	25.2	28.2
Part-time employed	29.3	23.6	29.1
Full-time employed	31.1	22.6	28.3
Subjective health	NS	**	NS
<Good	30.8	27.8	30.9
(Very) good	32.3	22.9	27.5
Living with child(ren)	NS	NS	NS
No	32.5	24.5	28.2
Yes	31.6	23.1	28.5
Living with other person than child(ren)/spouse	(+)	NS	NS
No	30.6	23.5	28.1
Yes	36.6	25.7	29.9
Marital status	NS	(+)	NS
Married	30.4	23.8	29.5
Unmarried	36.6	20.0	25.6
Divorced/widowed	31.1	25.9	26.1
All***	31.9 <i>N</i> = 108	23.7 <i>N</i> = 212	28.4 <i>N</i> = 85

Source: “Care in Flanders”, CBGS, 2003

*F* test; (+)  $p < 0.10$ ,

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

\*\*\*  $p < 0.001$ , *NS*  $p > 0.10$

not the partner or a child ( $p < 0.10$ ). Among the extra-resident carers, being older than 45 is associated with a higher intensity of care, as well as being in less good health. There is a tendency for unmarried persons to provide less intensive extra-resident care. Among combining carers, no single socio-demographic characteristic is significantly related to care intensity. At last, Table 2 shows that the average intensity of co-resident care is higher than the intensity of extra-resident care, with combining carers scoring in-between.

In general, the descriptive findings on care involvement and care intensity indicate that the impact of the socio-demographic characteristics varies by the location of care, although results are not always in accordance with the hypotheses. In the next section, we will consider the impact of the determinants, net of the effects of the other variables.

## Multivariate results

### *Involvement in extra-resident and in co-resident care*

In a multinomial logistic regression analysis, the odds of being a co-resident carer, extra-resident carer or combining carer versus a non-carer are estimated (Table 3). The explanatory value of the model is rather low: 7% of the total variance in care involvement is explained by the socio-demographic factors.

Looking at the involvement in co-resident caregiving, significant coefficients are found for subjective health, the presence of a person who is not the partner or child in the household, and educational level. People who are in poorer health have higher odds of being a co-resident carer, the same holds for persons living in an ‘atypical’ household. There is a tendency for lower educated persons to be more



**Table 3** Multinomial logistic regression results for extra-resident and co-resident care involvement

	Co-resident carer (ref. non- carer)	Extra-resident carer (ref. non-carer)	Combining carer (ref. non-carer)
<b>Gender</b>			
Women	0.85 (0.56–1.29)	2.66 (1.92–3.68)***	1.00 (0.63–1.59)
Men (ref.)	–	–	–
<b>Age</b>			
25–34	0.60 (0.30–1.22)	0.69 (0.40–1.19)	0.96 (0.45–2.06)
35–44	0.67 (0.35–1.28)	1.10 (0.68–1.81)	0.92 (0.45–1.87)
45–54	0.79 (0.45–1.40)	1.19 (0.76–1.84)	0.80 (0.41–1.55)
55–64 (ref.)	–	–	–
<b>Educational level</b>			
Low	1.57 (0.96–2.59) (+)	0.87 (0.61–1.25)	1.21 (0.70–2.10)
Middle	1.29 (0.78–2.15)	1.20 (0.86–1.67)	1.44 (0.86–2.43)
High (ref.)	–	–	–
<b>Employment status</b>			
Full-time employed	0.89 (0.52–1.53)	1.05 (0.70–1.57)	0.79 (0.43–1.45)
Part-time employed	0.85 (0.43–1.69)	0.91 (0.59–1.42)	1.29 (0.68–2.45)
No paid work (ref.)	–	–	–
<b>Subjective health</b>			
<Good	1.61 (1.01–2.59)*	0.79 (0.52–1.21)	2.22 (1.34–3.69)**
(Very) good (ref.)	–	–	–
<b>Living with child(ren)</b>			
No	1.15 (0.73–1.83)	1.54 (1.11–2.15)*	0.81 (0.48–1.36)
Yes (ref.)	–	–	–
<b>Living with other person than child(ren)/spouse</b>			
No	0.33 (0.19–0.57)***	0.68 (0.39–1.17)	0.31 (0.17–0.57)***
Yes (ref.)	–	–	–
<b>Marital status</b>			
Unmarried	1.39 (0.76–2.54)	0.58 (0.35–0.97)*	0.91 (0.46–1.83)
Divorced/widowed	1.00 (0.54–1.85)	0.93 (0.61–1.41)	0.66 (0.31–1.39)
Married (ref.)	–	–	–

$N = 2,486$  Nagelkerke  $R^2 = 0.07$ ,  $p < 0.001$

Standardized odds ratios (confidence intervals in parentheses)

Source: “Care in Flanders”, CBGS, 2003

(+)  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

likely to provide care for a household member, compared to the highest educated ( $p < 0.10$ ). Gender, age, employment status, and other indicators of the living arrangement are not significantly related to co-resident caregiving, as hypothesized.

Turning to involvement in extra-resident care, it appears this is only related to gender and living arrangement. Women are more likely to give care to someone living in another household compared to men. Persons without children in their household are also more likely to provide extra-resident care. Compared to married persons, the unmarried have lower odds of being an extra-resident carer. In the multivariate analysis, age and employment status are no longer significantly related to involvement in extra-

resident care. In contrast with the hypotheses, extra-resident care is neither related to educational level nor to subjective health.

Determinants of providing both co-resident and extra-resident care are comparable to those of co-resident care: compared to non-carers, combi-carers are more often in poorer health and they more likely are to live together with a parent or another person who is not their partner/child.

#### *Intensity of extra-resident and co-resident care*

In order to test the impact of the socio-demographic factors on the intensity of co-resident and extra-resident caregiving, a linear regression analysis was carried out for all three

groups of carers, with the sum score of frequency as dependent variable. Table 4 (columns 1 and 2) presents the results for the co-resident and extra-resident carers. As the model for combi-carers did not reach statistical significance at the 0.10 level, these results are not shown. Looking at co-resident care, it appears that being younger than 55 is related to a higher intensity of caregiving. Moreover, persons working full-time or part-time are giving lower amounts of care within the household, compared to persons without paid work. Among extra-resident carers, there is a tendency for persons in poorer health to provide care with a higher intensity and for persons living with someone else than a partner or child to provide more intensive care. Gender, educational level, employment status and the presence of children in the household are not related to the intensity of extra-resident caregiving. Controlling for the other factors, the effects of age and marital status are no longer significant as well.

Columns 4–6 of Table 4 present the results of a stepwise linear regression analysis, in which the location of caregiving and the socio-demographic determinants are entered first, followed by the interaction variables. The coefficients for location in the first two models indicate that people providing extra-resident care are giving a lower amount of care than co-resident carers. Entering the interaction variables leads to a significant increase in the explained variance, confirming a different impact of age and employment status, according to the location of care. While the impact of marital status was neither significant among co-resident nor among extra-resident carers, the significant interaction effect for unmarried persons, points into the direction of this group providing more intensive care within the household (compared to married persons), and less intensive care outside the household. Taken as a whole, these results indicate—in contrast with the hypotheses—that the amount of co-resident caregiving is related to a number of socio-demographic characteristics of the caregiver, while intensity of extra-resident care cannot be explained by these factors.

## Discussion

The aim of this article was to add to the literature on the ‘supply side’ of informal care, by examining the socio-demographic determinants of co-resident and extra-resident informal caregiving. Determinants of involvement in, as well as the intensity of both types of care were investigated, based on the expectation that extra-resident caregiving would be more strongly related to socio-demographic characteristics of the (potential) caregiver than co-resident care. Results from the population survey “Care in Flanders”, that contains information on

approximately 2,800 respondents between the ages of 25 and 65, show that about one out of five was involved in informal caregiving in the past year. While 5% gives merely co-resident care, 10% is exclusively involved in extra-resident care, and 4% combines both types of care. Although our definition of informal caregiving, which is based on the range of care tasks provided, is quite specific, results are comparable to those of Alber and Köhler (2004). According to these authors, “two separate worlds of care” can be seen in Europe: “care at home is given much more frequently in acceding and candidate countries, whereas external care tends to be more frequent in EU countries” (2004, p. 58). Being one of the EU-15 countries, Belgium shows a proportion of extra-resident carers that is twice as high as the proportion providing care to a household member in their study.

With respect to the determinants of involvement in informal care, our results provide evidence for the idea of a different impact of the socio-demographic characteristics according to the location, although they do not always turn out as hypothesized. The results on the effects of gender and the presence of children in the household (an indicator for having other family commitments), are in line with the expectations. No differences in co-resident care involvement are found between men and women and persons with or without children in the household. Extra-resident care involvement on the other hand, is more common among women and persons without children. The last finding confirms that the principle of ‘putting one’s own family first’ may be appropriate to prioritise claims and can be used as a “legitimate excuse” for not getting involved in extra-resident care (Finch and Mason 1993). In line with other studies, men (compared to women) also seem to have more access to “legitimate excuses” for not providing care outside the household. The more obligatory nature of co-resident care and the situation that co-residing creates, may diminish the legitimacy of the reasons that typically justify men’s lack of involvement in caregiving, resulting in equal proportions of men and women caring for a household member (Campbell and Martin-Matthews 2000; Finch and Mason 1993).

Results on the impact of age, educational level and employment on care involvement are not in line with the expectations. In the bivariate analysis, there was a tendency for co-resident care to be more commonly provided by persons older than 55, lower educated persons and persons without paid work, and for extra-resident care to be more frequently given by persons aged 45–54, having finished higher secondary education and working part-time or having no paid work. These results suggest that socio-demographic factors may act differently according to the location of caregiving. However, in the multivariate analysis these characteristics were no longer associated with



**Table 4** Linear regression results for the intensity of extra-resident and co-resident care (standardized beta-coefficients)

	Co-resident carers	Extra-resident carers	Combined analysis co-resident and extra-resident carers		
			Model 1	Model 2	Model 3
<b>Location</b>					
Extra-resident	Cst.	Cst.	−0.33***	−0.29***	−0.07
Co-resident (ref.)			–	–	–
<b>Gender</b>					
Women	−0.06	−0.06		−0.02	−0.06
Men (ref.)	–	–		–	–
<b>Age</b>					
25–34	0.38*	−0.10		0.08	0.49***
35–44	0.41*	0.02		0.15(+)	0.60***
45–54	0.43**	0.14		0.23**	0.55***
55–64 (ref.)	–	–		–	–
<b>Educational level</b>					
Low	−0.06	0.09		0.01	0.03
Middle	0.05	−0.03		0.03	0.01
High (ref.)	–	–		–	–
<b>Employment status</b>					
Full-time employed	−0.50**	−0.08		−0.20*	−0.56***
Part-time employed	−0.32*	0.01		−0.12(+)	−0.39**
No paid work (ref.)	–	–		–	–
<b>Subjective health</b>					
(Very) good	0.05	−0.12(+)		−0.02	−0.04
<Good (ref.)	–	–		–	–
<b>Living with child(ren)</b>					
Yes	−0.01	−0.12		−0.05	−0.07
No (ref.)	–	–		–	–
<b>Living with other person than child(ren)/spouse</b>					
Yes	0.07	0.13(+)		0.13*	0.09
No (ref.)	–	–		–	–
<b>Marital status</b>					
Unmarried	0.20	−0.09		0.04	0.20*
Divorced/widowed	0.04	0.08		0.05	0.07
Married (ref.)	–	–		–	–
<b>Interaction variables</b>					
Extra-res. × age 25–34					−0.46**
Extra-res. × age 35–44					−0.54**
Extra-res. × age 45–54					−0.39**
Extra-res. × part- time work					−0.33*
Extra-res. × full- time work					−0.44**
Extra-res. × unmarried					−0.20*
Extra-res. × divorced/widowed					−0.01
	<i>N</i> = 101	<i>N</i> = 203	<i>N</i> = 304	<i>N</i> = 304	<i>N</i> = 304
	Adj. <i>R</i> <sup>2</sup> = 0.08	Adj. <i>R</i> <sup>2</sup> = 0.07	Adj. <i>R</i> <sup>2</sup> = 0.10	Adj. <i>R</i> <sup>2</sup> = 0.13	Adj. <i>R</i> <sup>2</sup> = 0.18
	<i>p</i> < 0.10	<i>p</i> < 0.05	<i>p</i> < 0.001	<i>p</i> < 0.001	<i>p</i> < 0.001
			Sig. change < 0.001	Sig. change < 0.05	Sig. change < 0.01

Source: “Care in Flanders”, CBGS, 2003

(+)*p* < 0.10, \**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001

Only significant interaction variables are retained in model 3

involvement in co-resident and neither with extra-resident care at the 0.05 level. As regards co-resident care, the absence of significant relationships is in accordance with the idea of household members providing care, regardless of personal characteristics. Results on involvement in extra-resident care on the other hand, provide no support for the hypothesis of some groups, e.g., younger persons, having more access to “legitimate excuses” to restrain from caregiving. The expectation with regard to educational level, was that as higher educated persons generally live further away from their families, they have more access to the “excuse” of distance, resulting in lower extra-resident care involvement. One explanation for the absence of a relationship with extra-resident caregiving, could be that higher educated persons in Flanders feel a stronger commitment to provide care, which counterbalances the effect of distance. Indeed, Heylen and Mortelmans (2006b) found that higher educated persons in Flanders are more willing to provide extra-resident care, and are to a higher extent motivated by a sense of duty. An alternative explanation could be that higher educated persons have more (financial) resources, which makes it easier to ‘overcome’ this distance. The same explanation could apply to people involved in paid work: according to Arber and Ginn (1995), persons who are employed are in a better position to provide extra-resident care, since they are being more likely to own a car and have enough financial resources. If it is true that these resources facilitate the provision of informal care, this might counterbalance the negative effects of distance and lack of time. After all, as Finch and Mason (1993) emphasize, “legitimate excuses” are not factors whose effects are fixed: some people may make themselves available, or manipulate their own ability to provide support, rather than viewing lack of time or distance as insurmountable.

With regard to subjective health, it was found that persons in poorer health were more often giving care to a household member than persons in (very) good health. No relationship was found between health and extra-resident caregiving, providing no support for the idea of bad health “legitimizing” lower involvement in care. A possible explanation for the first finding is that providing informal care to a household member is a risk factor for health. Indeed, several studies have shown that informal caregiving may be deleterious for one’s psychological and physical wellbeing (Hirst 2003; Schulz and Beach 1999). From this perspective, health status is perceived as an outcome, rather than a determinant of informal caregiving. The absence of a relationship between health status and caregiving for a person outside the household could imply that extra-resident caregiving is less detrimental for health. A number of differences between involvement in co-resident and extra-resident care furthermore appear with regard to the

characteristics of the living arrangement. First, the presence of a parent or another person in the household who is not the partner or a child was related to a higher co-resident care involvement, while no relationship was found with extra-resident care. In interpreting this result, it is important to keep in mind that in Flanders/Belgium—like in other Western European countries—sharing the household with parents, is not common in adulthood (Lodewijckx 2006). It is plausible, that in a substantial number of cases, this living arrangement was chosen because of the care needs of the parent, resulting in a higher proportion of co-resident carers in this group. On the basis of these (cross-sectional) data it is however not possible to disentangle the causality of the findings. Marital status, which is another indicator of family commitments, was related to extra-resident caregiving, but not to co-resident care. Unmarried persons appear to be less often involved in extra-resident care, compared to married persons. As this result as well offers no evidence for family commitments “legitimizing” lower involvement, an alternative explanation could be that married persons have larger networks, which increases the risk of being confronted with a family member or friend in need of care.

Turning to the intensity of caregiving, our results provide no confirmation at all for the idea of the amount of extra-resident care being more strongly related to socio-demographic characteristics. Among extra-resident carers, no single socio-demographic factor was significantly related to caregiving intensity at the 0.05 level. Among co-resident carers on the other hand, results showed that younger persons and persons without paid work were giving more intensive care. Testing for the interaction effects did confirm that the relationship between socio-demographic factors and intensity varies between co-resident and extra-resident carers. The interpretation of these results is not straightforward, due to a lack of information on the type of care needs and the causality of the relationships. With regard to the effect of age, it may be possible that younger persons are confronted with higher care needs, which require more intensive caregiving. Younger persons may be more likely to look after a child with a handicap, while persons above the age of 55 might rather be confronted with (less severe) health problems of their spouse. The result that persons without paid work or working part-time are more intensely providing care within the household, most likely is to be explained by the fact that these persons have stopped working or reduced their hours of working because of the caregiving demands (Arber and Ginn 1995). As reported by Arber and Ginn, co-resident carers are more likely to reduce participation in paid employment. Among extra-resident carers, they found little evidence that giving care (which was on general less time-demanding) did lead to a reduction in paid

employment. Finally, another result worth mentioning in this context is the higher intensity of co-resident vs. extra-resident caregiving. Controlled for the socio-demographic characteristics, location of care seems to be a highly relevant determinant of the intensity of caregiving. This result indicates that co-residence does create a situation in which more care is given, independent of the characteristics of the caregiver.

Overall, our results point to the weakness of a strictly supply based approach in order to predict evolutions in informal caregiving. Since socio-demographic characteristics like gender, age, employment status, educational level—the only variables whose future development can be more or less foreseen—only account for a limited proportion (7%) in the total variance of involvement in informal care, mere supply based predictions are hazardous. In accordance with Wittenberg et al. (1998), we conclude that the amount of informal care should ideally be modeled as a function of both supply and demand factors. In order to perform such analyses a dataset is required which contains information on both the caregiver and care recipient. Unfortunately, the survey “Care in Flanders” contains only scarce information on the care recipient and his/her situation. With regard to co-resident caregiving, earlier analyses demonstrated that the fact of living together with a person in need of care is the most important determinant of involvement in co-resident care (De Koker 2006). Most probably, being confronted with someone in need of care is also one of the most important determinants of involvement in extra-resident care. Moreover, it can be expected that intensity of caregiving will be determined by the height of care needs. However, since the survey does not provide information on these topics, it is not possible to rule out the possibility that some groups are more often involved in care or provide more intensive care because they are more likely to be confronted with (higher) care needs. Another aspect of this study which deserves some further comments pertains to the fact that it is based on cross-sectional data. In using a determinant approach, it is assumed that caregiving is influenced by the socio-demographic characteristics of the respondents. However, as was already mentioned above, the relationship between the socio-demographic characteristics and caregiving may also proceed the other way around. On the basis of cross-sectional data, no claims can be made on the causality of findings. In some predictive models of caregiving, employment situation and health are for this reason not included as determinants of caregiving (Pickard 2008). However, with regard to more ‘stable’ characteristics like gender, age, and marital status, this question of causality is not likely not apply. A last remark on the limitations of the study refers to the sample used. The selection of respondents in this study is twofold. Firstly, there was the age

restriction in the original sample, excluding a substantial amount of informal caregiving (esp. by spouses of the oldest old). Secondly, the analyses are performed on a reduced sample since item-non-response cases were removed. Persons excluded from the analysis because of item-non-response were more likely to be older, female, lower educated, without paid work, in poorer health and living in an ‘atypical’ household. As these characteristics were (at least bivariate) related to more (intensive) caregiving, it is possible that this resulted in an underestimation of involvement in and intensity of both types of caregiving. However, as the respondents of the survey were representative of the general population and item-non-response was quite low, we do not think that the relationships reported are seriously distorted by the non-randomness of the missing data. A comparison with the results of the Belgian population census of 2001 shows similar trends, which confirm our findings. As reported here, it is found in the census that extra-resident caregiving is higher among women, while co-resident care is more gender balanced. Also, the census reveals more co-resident caregiving among persons living in an ‘atypical’ household. A strong relationship is found between informal caregiving and poor health, especially if care is provided for more than 4 h a day, pointing into the direction of our finding that persons in lower subjective health are more often giving care to a member of the household (Deboosere et al. 2006).

Notwithstanding the limitations, this study provides interesting insights into the supply side of informal care. Results provide evidence for a different relationship between socio-demographic characteristics and informal caregiving according to the location of care. In order to fully comprehend evolutions in informal care, future studies should be aware of the differences between co-resident and extra-resident care, taking into account factors from a supply as well as a demand perspective. While the perspective of the care recipient was not taken into consideration in this study, the higher intensity of co-resident caregiving suggests that people living alone, can rely less on extensive forms of informal care and as a result, will need more formal help. Monitoring and forecasting the living arrangements of older persons hence is of paramount importance for policymakers to get an idea of the volume of services needed. Finally, it is important to keep in mind that the lack of a significant impact of employment and educational level on care involvement and the intensity of extra-resident care, gives no support for a pessimistic outlook on the future of informal care. While employment and educational level of the population are expected to rise, there is no evidence that this will lead to a reduction in the supply of informal care.

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