

# Inequalities in associations between young adult caregiving and social relationships: Evidence from the UK Household Longitudinal Study

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## Abstract

**Introduction:** Young adult caregivers (aged 16–29 years) are an important but underrecognized group of informal caregivers. There is some evidence suggesting that young adult caregivers have fewer social relationships. However, this research has been largely cross-sectional in design or restricted to caregivers, providing no comparison with noncaregivers. Further, there is little evidence on whether and to what extent there are inequalities in associations between young adult caregiving and social relationships by gender, age, caregiving intensity, or household income.

**Methods:** Using five waves of data on 3–4000 young adults aged 16–29 from the UK Household Longitudinal Study, we investigated associations between becoming a young adult caregiver and subsequent social relationships (number of close friends and participation in organized social activities) in the short-term (1–2 years after caregiving initiation) and longer-term (4–5 years later). We also assessed differences by gender, age, household income, and caregiving intensity.

**Results:** Overall, those who became young adult caregivers, and particularly those providing 5+ h/week, reported fewer friends in the short- but not longer-term. No associations were observed between young adult caregiving and participation in organized social activities. Also, there was no evidence of differences by gender, age, income, or caregiving hours.

**Conclusions:** Becoming a young adult caregiver is associated with a reduction in number of close friends, particularly in the short-term. Given the importance of practical and emotional support provided by friends, the early identification of young adult caregivers and greater population awareness of caring in young adulthood may help to mitigate the effects on social relationships.

## KEYWORDS

caregiving, friendship, inequality, social activities, young adult carer

## 1 | INTRODUCTION

### 1.1 | Young adult caregiving

Young adult carers (aged 16–29) are an important but underrecognized group of informal caregivers. The profile of this important group of caregivers was raised by Becker and Becker (2008). However, it has been difficult to ascertain an accurate estimate of the prevalence of young adult carers in the UK and other countries. Recent analysis of UK Household Longitudinal Study (UKHLS) data from 2009 to 2021 estimated that the prevalence of young adult caregiving in those aged

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16–29 is around 9% and has remained stable over time (Di Gessa et al., 2022). There is, therefore, a significant proportion of young adults providing informal care during this lifecourse stage—a stage characterized by many important transitions, including exiting full-time compulsory education, moving to employment, further- and higher-education, and forming partnerships and families (Shanahan, 2000). The provision of informal care during young adulthood, therefore, has the potential to derail individuals from making these important transitions (Becker & Becker, 2008). However, the social impacts of being a caregiver have mainly been researched in older adults. For instance, a study from the United States National Study of Caregiving (Cook et al., 2018) showed that carers aged 65+ were likely to report “social strain” defined via impacts of caregiving on participation in organized activities, visiting friends and family, and participation in other caring roles (e.g., providing care for another child or adult). This was particularly the case for women and those providing the most intense levels of caregiving (i.e., being in the top quartile on a sum score of the number of Instrumental Activities of Daily Living [IADL] provided to the care recipient). However, analysis of the Canadian Longitudinal Study on Aging (adults aged 44+) found that carers reported higher levels of social participation (measured as frequency of participation in community-related activities) compared with noncarers (Sibalija et al., 2020).

Despite the evidence in older adult caregivers, less is known about the social impacts of being a caregiver in younger adulthood. It has been argued that considering *when* in the lifecourse individuals caregiving roles are taken up is central to examining its different experiences and effects (Hamilton & Cass, 2017) and consequently we cannot assume that caregiving in young and older adulthood have equivalent effects on social outcomes. The provision of informal care in young adulthood, a period in which care provision is less normative (Hamilton & Cass, 2017), has thus far been associated with a range of negative outcomes for the caregiver, including poorer mental and physical health (Lacey et al., 2022; van der Werf et al., 2022), lower levels of wellbeing (Haugland et al., 2020, 2022), impacts on work and education (Becker & Sempik, 2019), and less participation in social and leisure activities (Haugland et al., 2022).

## 1.2 | Young adult caregiving and social relationships

Social relationships, particularly with peers, are an important feature of young adulthood. In the present study, social relationships are used as an umbrella term encompassing social networks and connections, social activities, and social support (Umberson & Karas Montez, 2010). Much research has demonstrated that social relationships are important for both physical and mental health (Cohen, 2004; House et al., 1988). For instance, people who are more socially connected go on to live longer and healthier lives than those who have fewer social connections (Umberson & Karas Montez, 2010). Further, social relationships do not remain static over time; they change with age and also in response to life events (Schulz & Tompkins, 1990), one example of which might be becoming a caregiver. Social relationships are important in adolescence and young adulthood as young adults are expected to leave the parental home, establish intimate relationships, and engage in leisure, social, and academic activities outside of their family (Haugland et al., 2022). It is therefore important that we investigate how becoming a young adult caregiver influences the social life (and particularly the friendships and participation in organized activities—as operationalized in the present study) of young adults. Caregiving activities, particularly those which are intense in nature, might place limits on leisure time, reduce emotional availability for friends, or represent the loss of previous social support from the care recipient (Schulz & Tompkins, 1990).

Despite a plausible link, relatively little is known to date about how young adult caregiving impacts on social relationships. Much of this research has been qualitative, does not include a comparison group of noncaregivers, or is cross-sectional in design. For instance, a qualitative study conducted in England and Wales by Thomas et al. (2003) reported that young carers frequently reported problems with friendships, having little time to meet up with friends, and feeling that caring inhibited them from forming new friendships. Similarly, a UK mixed-methods study by Becker and Becker (2008) reported that young adult carers frequently put their friendships second to their care responsibilities and that risks them becoming socially isolated from peers. Similarly, a cross-sectional study from Norway (Haugland et al., 2022) of young adults in higher education in 2018 found that young adult carers reported fewer close friends and were less likely to participate in organized student activities (e.g., student interest groups and sports clubs) than their noncaregiving peers. However, although this was a relatively large study ( $n = 50,054$ ), it had a low response rate (30%) and only sampled young adults who were in higher education, thereby limiting its generalizability. The cross-sectional nature of the study also made it impossible to ascertain whether caregiving results in short- or longer-term effects on social relationships.

It is also plausible that the association between young adult caregiving and social relationships varies by caregiving intensity. Indeed, Becker and Becker (2008) reported that many young adult carers with the most intense caregiving responsibilities, for example, who were providing many hours of care per week, were those who reported the most difficulties in participating in social activities and troubles in maintaining or making new friendships in their mixed methods study. However, variations in associations between young adult caregiving and social relationships by caregiving hours have not been explored to date in a longitudinal, quantitative study. Longitudinal studies track the same individuals over time, making

it possible to examine whether associations exist in the longer-term and also allow us to look at how becoming a caregiver affects changes in social relationships.

There might also be differences in the association between young adult caregiving and social relationships by gender, age, and household financial circumstances. Women are more likely to be informal carers. In parallel, there are important gender differences in social relationships; women tend to have larger confidant networks, resulting in a potentially wider pool of support when needed due to changing personal circumstances, for example, the uptake of caregiving (Umberson & Karas Montez, 2010), therefore the social relationships of women taking up caregiving roles might be less affected. Relating to age, as stated before, the age when a transition to caregiving occurs is likely to be important for subsequent outcomes (Hamilton & Cass, 2017). In the UK, most young people complete tertiary education by age 22 and from this point seek more independence from their families. Before this age there are more frequent opportunities to interact with peers and family members which may buffer the potential negative effects of caregiving. Given this, young adult caregiving may have more of a lasting effect on social relationships if it occurs after the transition out of full-time education and the family home (>22 years). With regard to income, living in a low-income household may preclude the resourcing of external care (Quashie et al., 2022). Hence associations between young adult caregiving and social relationships may be stronger in lower-income households. Differences by income, gender, and age have not been previously investigated in young adult caregivers and social relationships. However, analyses from the Survey of Health, Ageing, and Retirement in Europe (SHARE) on older adults found that the relationship between caregiving and life satisfaction was higher in wealthier households upon the uptake of care (Brandt et al., 2022), but we do not know whether this finding applies to social relationships as an outcome nor to young adult caregivers.

### 1.3 | The present study

The present study sought to investigate associations between young adult caregiving and social relationships (as captured by number of friends and participation in organized social activities) in the short- and longer-term. We also assessed whether these associations differed by gender, age, household income, and by caregiving hours. This study was conducted using high-quality longitudinal data, representative of the UK, thereby advancing what we know to date on associations between young adult caregiving and social relationships.

## 2 | MATERIALS AND METHODS

### 2.1 | Data and sample selection

This study used data from the UKHLS, also known as “Understanding Society.” The UKHLS is a longitudinal, household panel study representative of UK households. The study began in 2009, superseding the British Household Panel Study which ran from 1991 to 2009, with an initial sample of ~40,000 households obtained via a stratified, clustered, probability design. The study began with an initial response rate of 57.3% and retention has remained high over time (Understanding Society, 2022). Further details about the study design can be found in the published cohort profile (Buck & McFall, 2011). All household members aged 16+ are interviewed annually on a variety of topics. To date, there are 11 waves of data available to researchers via the UK Data Service (<https://ukdataservice.ac.uk/>). The study received ethical approval from the University of Essex Ethics Committee.

The present study uses data from waves 3–6 and 9, based on the availability of key social relationship variables required for this study. The information on carer status at wave 3 was used to restrict our analyses to young adults aged 16–27 years who were not carers at “baseline” ( $n = 7999$ ). By selecting noncarers at wave 3 we were also able to account for any pre-care differences in social relationships as this information was also first available from wave 3.

We then used information on carer status at waves 4 and/or 5 to indicate our main exposure of becoming a young adult carer by age 29. Further, individuals had to have at least wave 6 or wave 9 social relationship outcomes observed (see below). Figure 1 shows a flowchart for the sample selection.

### 2.2 | Caregiving and caregiving hours at waves 4 or 5

Information on caregiving was derived from two questions asked of all UKHLS participants aged 16+. The first is whether “there is anyone living with you who is sick, disabled or elderly whom you look after or give special help to (e.g., a sick, disabled or elderly relative, husband, wife or friend, etc.)?”. The second is “do you provide some regular service or help for any sick, disabled or elderly person not living with you? Please exclude help provided in course of employment.” A positive

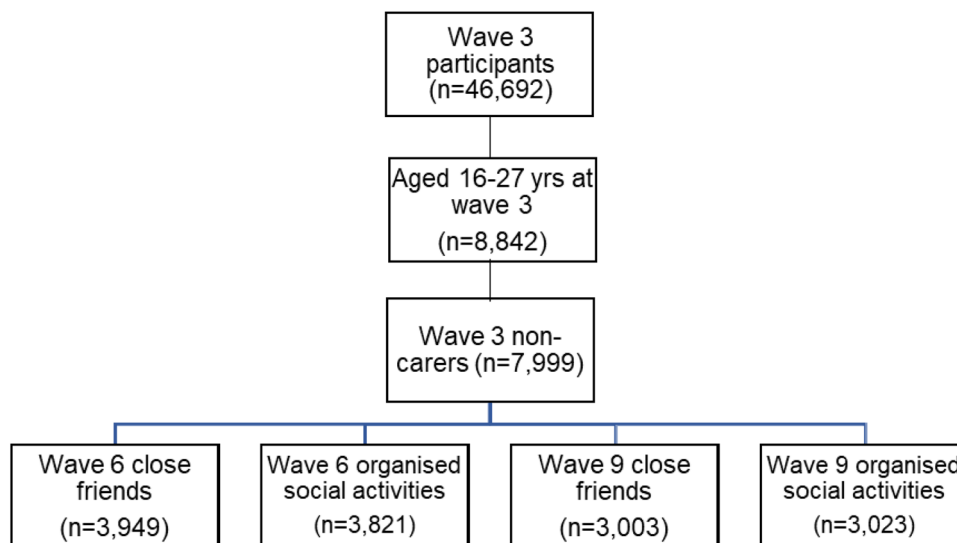


FIGURE 1 Flowchart describing the sample selection for this study. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1002/jadl.12202)]

answer to either of these two questions was used to indicate becoming a caregiver. This information was derived from waves 4–5.

Caregivers were asked a follow-on question about how many hours (in total) of care they provided per week. The possible response options were: 0–4 h/week, 5–9 h/week, 10–19 h/week, 20–34 h/week, 35–49 h/week, 50–99 h/week, 100+ h/week, varies under 20 h, varies 20 h or more, other. After checking the distribution of this variable in our sample of young adults, we categorized this variable into not caregiving, 0–4 h/week, and 5+ h/week, as most young adult caregivers in this sample were providing relatively few hours of care.

## 2.3 | Social relationships at waves 3, 6, and 9

### 2.3.1 | Friendships

At waves 3, 6, and 9 all participants aged 16+ were asked how many close friends they had (Q: “How many close friends would you say you have?”). These variables were kept as count variables to retain the granularity of the data (see Appendix A).

### 2.3.2 | Organized social activities

At waves 3, 6, and 9 all participants aged 16+ were also asked “whether you are a member or not, do you join in the activities of any of these organizations on a regular basis?” The listed organizations were: political party, trade union, environmental group, parents'/school association, tenants'/residents' group or neighborhood watch, religious group or church organization, voluntary services group, pensioners group/organization, Scouts/Guides organization, professional organization, other community or civic group, social club/working men's club, sports club, Women's Institute/Townswomen's Guild, women's group/feminist organization, other group or organization, or none of these. This information was collapsed into three categories for analysis based on the distribution in our sample (see Appendix A): no activities, 1 activity, and 2+ activities.

## 2.4 | Covariates

Several covariates were included in our analyses, all taken from wave 3 (the “baseline” of our study). These variables included sex (male/female), age (adolescent [16–22 years]/young adult [23–29 years]), ethnicity (White/Indian/Pakistani or Bangladeshi/Black/Mixed/Other), self-rated health (excellent/very good/good/fair/poor), number of own children in the household (0/1/2/3+), partnership status (married/cohabiting/divorced or separated/single), economic activity

(employed/unemployed or sick/looking after home or family/in education or training), and equivalised monthly household income (continuous variable).

## 2.5 | Missing data

Missing information is an important source of bias in many studies (White et al., 2011). To reduce this bias, we applied multiple imputation using chained equations. This specific method is able to handle a range of variables in the imputation models, for example, continuous and categorical variables. Following recommended practice (White et al., 2011), we included all analysis variable (exposures, outcomes, and covariates) in the imputation models, creating 20 imputed datasets. Multiple imputation assumes that information is missing at random. That is, that people with missing information systematically differ based on the information that is observed (Collins et al., 2001). Following imputation, our analyses were run on those with complete information on each outcome (retaining observed or imputed information on exposures and covariates), following the “multiple imputation then deletion” approach (von Hippel, 2007). This resulted in the following sample sizes for subsequent analyses: number of friends at wave 6 ( $n = 3949$ ) and wave 9 ( $n = 3003$ ); number of organized social activities at wave 6 ( $n = 3821$ ) and wave 9 ( $n = 3023$ ).

## 2.6 | Statistical analyses

First, we explored the descriptive characteristics of the study sample for the observed sample, the imputed sample and the imputed sample stratified by care status. These descriptives were run on all participants who were included in any of our subsequent analyses (i.e., those who had at least one outcome observed,  $n = 4474$ ). To test associations between being a young adult caregiver and number of friends we applied Poisson regression due to the count nature of our dependent variable. Estimates from all Poisson models are presented as incidence rate ratios (IRRs) to aid interpretation. These are interpreted as a ratio of the expected number of close friends for caregivers to the expected number of close friends for noncaregivers. To test associations between young adult caregiving and number of organized activities participated in we used multinomial logistic regression with zero activities as the referent outcome category. Estimates from the multinomial models are expressed as relative risk ratios (RRRs).

Two sets of models were run for each outcome (number of friends and number of activities). First, we estimated the crude association between young adult caregiving and each outcome. Second, we adjusted for the respective outcome at wave 3 to account for any potential pre-care differences in social relationships. Third, we adjusted for all of our remaining covariates. These models were first run for wave 6 outcomes, looking at the shorter-term effects ~1–2 years after becoming a young adult caregiver, followed by examining wave 9 outcomes to look at longer-term effects (~4–5 years after becoming a young adult caregiver).

To test for potential gender, age group, and household income differences, we included an interaction term between caregiving and these three potential modifiers in all models. Finally, to check for any differences by caregiving hours, we substituted the caregiving hours variable in place of the caregiving status in all models. Two sets of sensitivity analyses were conducted as a robustness check. First, we reran all our analyses on complete cases (i.e., those who had all variables observed at all waves,  $n = 2387$ ). Second, we conducted the analyses on those people in our sample who had both each outcome observed at both timepoints (i.e., for the number of friends outcome, running the analyses on those with number of friends reported at wave 6 *and* wave 9). This was done to check whether we could compare results across the two outcome waves in the same sample. Survey weights were applied in all analyses to account for the complex survey design. All analyses were conducted using Stata v.17 (StataCorp, 2020).

## 3 | RESULTS

### 3.1 | Characteristics of the study sample

The descriptive characteristics of the study sample are presented in Table 1. Focusing on the imputed analytic sample, 7.6% of our sample became young adult caregivers in waves 4 or 5. Young adult caregivers were relatively even split between providing 0–4 h/week and 5+ h/week of care. Regarding our outcomes, young adults in our sample reported a median of four friends and this was the same in waves 6 and 9, and the same for carers and noncarers. In wave 6, more than half of young adults in our sample (58.5%) did not participate in any organized social activities, with 28.6% participating in one, and 12.9% participating in two or more. Participation in social activities for the whole sample decreased by wave 9, where 67.3% reported not participating in any and only 9.1% participated in two or more. Some differences between young adult

**TABLE 1** Descriptive characteristics of the study sample, plus a comparison of imputed and observed data.

	Observed		Analytic, imputed sample ( <i>n</i> = 4474) <sup>a</sup>		
	N	%/median[IQR]	Overall, %/median[IQR]	Became caregivers, %	Noncaregivers, %
<i>Exposures</i>					
Became a caregiver (W4/5) <sup>b</sup>					
Noncaregiver	6011	92.4	92.4		
Caregiver	497	7.6	7.6		
Missing	1491				
Caregiving hours per week (W4/5)					
Noncaregiver	6011	92.8	92.6		
0–4 h/week	239	3.7	3.8		
5+ h/week	230	3.5	3.6		
Missing	1519				
<i>Outcomes</i>					
Number of close friends (W6)					
Median [IQR]		4 [3, 5]	4 [3, 5]	4 [3, 5]	4 [3, 6]
Missing	4050				
Number of close friends (W9)					
Median [IQR]		4 [3, 6]	4 [3, 6]	4 [3, 6]	4 [3, 6]
Missing	4996				
Number of organized activities (W6)					
0	2227	58.3	58.2	64.0	57.7
1	1097	28.7	28.7	25.8	29.0
2+	497	13.0	13.1	10.3	13.3
Missing	4178				
Number of organized activities (W9)					
0	2032	67.2	66.8	69.7	66.5
1	714	23.6	23.7	20.4	24.0
2+	277	9.2	9.5	9.9	9.5
Missing	4976				
<i>Covariates</i>					
Number of friends (W3)					
Median [IQR]		4 [3, 6]	4 [3, 6]	4 [3, 6]	4 [3, 6]
Missing	1328				
Number of organized activities (W3)					
0	4146	62.2	62.1	64.7	61.9
1	1818	27.3	27.0	26.8	27.0
2+	707	10.6	10.9	8.5	11.1
Missing	1216				
<i>Sex</i>					
Male	3778	47.2	44.1	37.9	44.6

TABLE 1 (Continued)

	Observed		Analytic, imputed sample ( <i>n</i> = 4474) <sup>a</sup>		
	N	%/median[IQR]	Overall, %/median[IQR]	Became caregivers, %	Noncaregivers, %
Female	4221	52.8	55.9	62.1	55.4
Missing	0				
Age (W3)					
16–22 years	5004	62.6	61.8	60.9	61.9
23–29 years	2995	37.4	38.2	39.1	38.1
Missing	0				
Household monthly income (W3)					
Median [IQR], £s		1289.7 [903.7, 1758.2]	1306.4 [925.6, 1773.9]	1193.4 [842.8, 1628.1]	1319.3 [938.8, 1784.3]
Missing	7				
Ethnicity (W3)					
White	6217	78.4	80.6	78.3	80.8
Mixed	267	3.4	3.2	2.6	3.3
Indian	258	3.3	2.9	2.8	2.9
Pakistani/Bangladeshi	557	7.0	6.9	11.9	6.5
Black	413	5.2	4.4	3.3	4.5
Other	214	2.7	2.0	1.2	2.1
Missing	73				
Self-rated health (W3)					
Excellent	2234	27.9	27.0	18.0	27.9
Very good	3158	39.5	39.7	32.8	40.3
Good	1852	23.2	23.7	30.8	23.1
Fair	620	7.8	7.8	15.2	7.2
Poor	132	1.7	1.8	3.3	1.6
Missing	3				
Number of own children (W3)					
0	6898	86.2	84.7	77.2	85.3
1	663	8.3	9.5	14.7	9.0
2	336	4.2	4.4	5.1	4.3
3+	102	1.3	1.5	3.0	1.4
Missing	0				
Partnership status (W3)					
Married	559	7.0	8.3	9.5	8.1
Cohabiting	1141	14.3	15.2	14.3	15.2
Divorced/separated	34	0.4	0.4	1.6	0.3
Single	6261	78.3	76.2	74.6	76.3
Missing	4				
Economic activity (W3)					
Employed	3589	45.3	45.3	38.8	45.9

(Continues)

TABLE 1 (Continued)

	Observed		Analytic, imputed sample ( $n = 4474$ ) <sup>a</sup>		
	N	%/median[IQR]	Overall, %/median[IQR]	Became caregivers, %	Noncaregivers, %
Unemployed or sick	943	11.9	10.5	17.1	9.9
Homemaker	369	4.7	5.2	8.9	4.9
Education or training	3027	38.2	39.0	35.2	39.4
Missing	71				

Abbreviations: IQR, interquartile range; SD, standard deviation; W, wave.

<sup>a</sup>Descriptives are presented for those with at least one of the four observed outcomes ( $n = 4474$ ).

<sup>b</sup>Becoming a carer in wave 4 or 5 is used to construct carer status.

caregivers and their noncaregiving peers in the number of organized social activities participated in both outcome waves; young adult caregivers reported fewer social activities than their peers.

Regarding our study covariates, there was no evidence of pre-care differences in the number of friends reported at wave 3 (our baseline, median = 4) by carers and those who became young adult caregivers. However, the number of organized social activities that young adults who became caregivers reported at wave 3 was slightly lower than their peers. There were more young women in our sample than men (55.9% vs. 44.1%), and women were more likely to be young adult caregivers. There was very little difference in caregivers by age group. Monthly equivalised household income was lower for young adults who subsequently became caregivers (£1193 vs. £1319). The majority (80.6%) of our sample identified with being of white ethnicity. Pakistani or Bangladeshi young adults were more likely to become young adult caregivers. Most young adults had excellent or very good health, and fair or poor health was more commonly reported in young adults who became caregivers. 85% of our sample had no children of their own but young adults who became caregivers had more children at wave 3. Most of our sample were single (76.2%) and there were few differences in partnership status by caregiving. 45.3% of our sample of young adults were in employment, 39.0% in education or training, 10.5% were unemployed or sick, and 5.2% were homemakers. Young adults who subsequently became caregivers a year or two later were less likely to be employed at this point (38.8% vs. 45.9%) and were more likely to be unemployed or sick (17.1% vs. 9.9%).

### 3.2 | Associations between young adult caregiving and number of close friends

Table 2 shows the results of Poisson regressions testing associations between young adult caregiving and the number of close friends in the short-term (W6) and longer-term (W9). Young adult caregivers reported fewer friends at wave 6 compared with young adults who did not become caregivers (IRR = 0.90, 95% CI: 0.85, 0.95). This association remained largely unchanged after accounting for the number of friends reported in wave 3, before becoming a caregiver. However, accounting for the remaining covariates, this association was attenuated with weaker evidence of an association between caregiving and number of friends (IRR: 0.95, 95% CI: 0.90, 1.01). Investigating the impact of each covariate one by one, suggested it was an accumulation of characteristics which contributed to this attenuation, rather than being driven by one covariate in particular. None of the associations varied by gender, age, or household income. However, associations did vary by caregiving hours; as the number of hours increased, the number of friends decreased. For those providing 5 or more hours of care per week, differences remained after inclusion of baseline number of friends (IRR = 0.88, 95% CI: 0.81, 0.95) and additionally, all remaining covariates (IRR = 0.93, 95% CI: 0.86, 1.01).

There was little evidence of associations between becoming a young adult caregiver and the number of close friends reported in the longer term, at wave 9, nor of any differences by gender, age, household income, or caregiving hours.

### 3.3 | Associations between young adult caregiving and participation in organized social activities

Table 3 shows the results of multinomial logistic regression analyses testing associations between young adult caregiving and the number of organized social activities participated in at wave 6 (short-term) and wave 9 (longer-term). The table shows that there is a crude association between being a young adult caregiver and the number of activities reported at wave 6. Young adult caregivers were less likely to participate in one versus zero activities (RRR = 0.79, 95% CI: 0.60, 1.03,  $p = .085$ ). Similarly, there was some evidence that they were less likely to be participating in two or more activities versus zero (RRR = 0.70, 95% CI: 0.47, 1.02,  $p = .065$ ). After accounting for the number of activities reported before being a caregiver,



**TABLE 2** Associations between young adult caregiving and number of close friends in the short- (W6) and longer-term (W9).

	Number of close friends W6 ( <i>n</i> = 3949)			Number of close friends W9 ( <i>n</i> = 3003)				
	IRR	95% CI	<i>p</i> Value	IRR	95% CI	<i>p</i> Value		
Model 1—Crude association								
Caregiving	0.90	0.85	0.95	<0.001	0.97	0.91	1.03	0.264
Caregiving hours								
Noncaregiver	Ref				Ref			
0–4 h/week	0.93	0.87	1.01	0.071	0.98	0.90	1.07	0.664
5+ h/week	0.86	0.80	0.93	<0.001	0.93	0.85	1.02	0.133
Model 2—Adjusted for baseline number of friends (W3)								
Caregiving	0.91	0.86	0.96	0.001	0.99	0.93	1.05	0.774
Caregiving hours								
Noncaregiver	Ref				Ref			
0–4 h/week	0.95	0.88	1.02	0.178	1.01	0.93	1.10	0.758
5+ h/week	0.88	0.81	0.95	0.001	0.95	0.87	1.04	0.273
Model 3—Additionally adjusted for remaining covariates								
Caregiving	0.95	0.90	1.01	0.091	1.04	0.98	1.11	0.199
Caregiving hours								
Noncaregiver	Ref				Ref			
0–4 h/week	0.98	0.91	1.05	0.535	1.04	0.95	1.13	0.422
5+ h/week	0.93	0.86	1.01	0.095	1.03	0.94	1.13	0.505

Note: Model 1 is the crude association between caregiving and number of friends. Model 2 is the association between caregiving and number of friends adjusting for the number of friends at W3. Model 3 includes the number of friends at W3 plus all remaining covariates (sex, income, continuous age, number of children, partnership status, economic activity, self-rated health, and ethnicity).

Abbreviations: CI, confidence interval; IRR, incidence rate ratio; W, wave.

there was little evidence of an association between young adult caregiving and participation in organized social activities. None of the associations tested varied by gender, age, household income, nor caregiving hours. Similar to the findings for the number of friends, associations were only seen for wave 6 outcomes and not those captured 4–5 years late in wave 9.

The results of the two sensitivity analyses are also shown in Appendix B (complete case analyses) and Appendix C (both outcome waves observed). These results are consistent in their direction with the main analyses presented in this study.

## 4 | DISCUSSION

Using a large, representative UK longitudinal study we found some evidence that becoming a young adult caregiver was associated with reporting fewer close friends 1–2 years later compared with young adults who did not become a caregiver. There was little evidence of a longer-term effect and young adult caregivers did not participate in fewer organized social activities compared with their peers once prior activities were accounted. We found no evidence of differences in associations between young adult caregiving and social relationships by age, gender, income, nor caregiving intensity in this study.

Our findings on a short-term effect of becoming a young adult caregiver on the number of friends, particularly for those providing more than 5 h of caregiving, is broadly consistent with prior literature on this topic. For instance, the work of Haugland et al. (2022) on a cross-sectional study of young adults in higher education in Norway found that young adult carers reported fewer close friends than their noncaregiving peers. However, in the present study, we extend this work to suggest that the association may also hold in a longitudinal study design and also in a broader population of young adults in the UK, as we did not restrict our sample to those in higher education. Our finding here was also concordant with qualitative research which reported that young adult carers frequently report problems with forming and maintaining friendships

**TABLE 3** Associations between young adult caregiving and number of organized social activities participated in, in the short- (W6) and longer-term (W9).

	Number of activities W6 ( <i>n</i> = 3821)						Number of activities W9 ( <i>n</i> = 3023)									
	1 activity versus 0			2 activities versus 0			1 activity versus 0			2 activities versus 0						
	RRR	95% CI	<i>p</i> Value	RRR	95% CI	<i>p</i> Value	RRR	95% CI	<i>p</i> Value	RRR	95% CI	<i>p</i> Value				
Model 1—Crude association																
Caregiving	0.79	0.60	1.03	0.085	0.70	0.47	1.02	0.065	0.79	0.57	1.09	0.153	1.11	0.73	1.70	0.628
Caregiving hours																
Noncaregiver	Ref				Ref				Ref				Ref			
0–4 h/week	0.78	0.53	1.13	0.191	0.69	0.40	1.18	0.172	0.98	0.64	1.50	0.926	1.38	0.79	2.39	0.255
5+ h/week	0.76	0.52	1.11	0.157	0.67	0.39	1.16	0.156	0.57	0.34	0.95	0.032	0.90	0.48	1.71	0.750
Model 2—Adjusted for baseline number of activities (W3)																
Caregiving	0.80	0.61	1.05	0.106	0.73	0.49	1.09	0.122	0.80	0.57	1.10	0.174	1.14	0.73	1.77	0.560
Caregiving hours																
Noncaregiver	Ref				Ref				Ref				Ref			
0–4 h/week	0.76	0.51	1.12	0.160	0.67	0.38	1.17	0.161	0.97	0.63	1.49	0.874	1.33	0.75	2.36	0.323
5+ h/week	0.79	0.53	1.16	0.227	0.75	0.42	1.32	0.318	0.59	0.35	0.99	0.048	0.99	0.51	1.90	0.970
Model 3—Adjusted additionally for remaining covariates																
Caregiving	0.91	0.69	1.21	0.518	0.83	0.55	1.25	0.368	0.92	0.66	1.29	0.634	1.24	0.79	1.97	0.352
Caregiving hours																
Noncaregiver	Ref				Ref				Ref				Ref			
0–4 h/week	0.83	0.56	1.23	0.349	0.70	0.40	1.24	0.224	1.05	0.67	1.64	0.828	1.39	0.77	2.51	0.274
5+ h/week	0.95	0.64	1.41	0.791	0.93	0.52	1.67	0.806	0.74	0.43	1.25	0.255	1.13	0.57	2.24	0.722

Note: Model 1 is the crude association between caregiving and number of activities. Model 2 is the association between caregiving and number of activities adjusting for the number of activities at W3. Model 3 includes the number of activities at W3 plus all remaining covariates (sex, continuous age, income, number of children, partnership status, economic activity, self-rated health, and ethnicity).

Abbreviations: CI, confidence interval; RRR, relative risk ratio; W, wave.

(Thomas et al., 2003), and that they frequently put their caregiving responsibilities ahead of their friendships (Becker & Becker, 2008). This is important, as friendships with peers are an important source of healthy social functioning in adolescence and young adulthood (Brown & Larson, 2009), and are important predictors of health in adulthood (Landstedt et al., 2015). Reassuringly, our findings seem to suggest that becoming a young adult caregiver has a short-, rather than longer-term impact on friendships, as here we saw no associations between becoming a young adult carer and number of close friends reported 4–5 years' later.

We found relatively weak evidence of an association between becoming a young adult caregiver and the number of organized activities participated in, which then disappeared once we accounted for pre-care differences in activity participation. Our findings were therefore at odds with the work of Haugland et al. (2022)—the only other quantitative study which examined associations between young adult caregiving and participation in organized social activities. They found that young adult carers in higher education were less likely to participate in student activities, such as sports clubs and student interest groups. However, there are important differences in study methods and design, which may explain this. For instance, their sample was comprised of young adults who were in higher education and thus the young adult carers in their sample were already participating in educational activities in addition to their caregiving role. This likely leaves little time for additional social activities. In the present study, we analyzed a representative sample of the population of young adults, regardless of their education participation.

Finally, we found no differences by age, gender, or household income. This is likely because we find few differences in the main association between young adult caregiving and social relationships but may also be indicative of associations of similar magnitude across these different demographic groups. To be sure of this, this study should be replicated on a larger longitudinal data set where there is larger statistical power to detect moderation effects if they exist in the broader population.

## 4.1 | Strengths and limitations

This study has several strengths. First, the use of a UK-wide, representative sample of UK young adults is a major advance on previous literature on this topic. This allowed us to examine associations between becoming a young adult caregiver and social relationships in a broad population, rather than of young adults accessed via particular settings (e.g., higher education). The UKHLS is also longitudinal, and we took care in our analysis plan to ensure that becoming a caregiver preceded our short- and longer-term social relationship outcomes. We were also able to take into account “baseline” social relationship variables, therefore ensuring that any associations seen were not due to differences in friendships and participation in organized social activities before becoming a young adult caregiver. Further, we were able to take into account a range of potential confounding variables which may influence the association between caregiving and social relationships.

Regarding limitations, we had no information on the quality of relationships with peers, nor the support derived from friendships or organized activities. These are two important aspects which merit further research. Related to this, we constructed a score of the number of organized social activities that young adults participated in. This assumes that each is of equal importance, which is unlikely to be the case. Again, this relates to a lack of information on the importance and support gained from each activity. Second, we were able to reduce the bias attributable to missing data by applying multiple imputation. However, following standard approaches (von Hippel, 2007), our analyses used those young people who had outcomes observed at waves 6 or 9. These young people were less likely to become carers and were more socioeconomically advantaged than people excluded from our analyses, and hence associations between young adult caregiving and social relationships may have been underestimated. Third, in wanting to assess the longer-term effects on social relationships our information on becoming a young adult carer is 8–11 years old. Hence, some caution may be needed in translating findings to the experiences of young adult carers today, especially given increasing use of social media and other messaging apps through which young people maintain friendships (Décieux et al., 2019). Identification as a young adult caregiver is a process. Montgomery et al. (2007) identified five stages of the “caregiving career.” Stage 1 of which is caregiving onset, when caregiving activities are performed but caregivers are rarely aware of their caregiving role identity. It is therefore possible that young adult caregivers are providing some level of care before identifying that they are a carer in a questionnaire. This is a problem with all studies on carers of all ages and may lead to the under-ascertainment of carers and dilution of associations between caring and outcomes. Finally, we had no information on the reasons behind the care recipients care need (e.g., health condition) nor the activities undertaken by the caregiver. Associations between caregiving and social relationships likely depend on these factors.

## 5 | CONCLUSION

In summary, our study shows that becoming a young adult caregiver had a modest and short-term impact on the number of close friends reported, particularly for those providing more hours of care per week. There were no associations between becoming a young adult caregiver and the number of organized activities that young adults participated in, in the short- or long-term. There was no variation in associations by gender, age, or household income. Qualitative studies could also offer insights into better understanding the support needs of young adult caregivers and what interventions they would find helpful to prevent effects on friendships. Early identification and improving population awareness of young adult caregivers may help to ameliorate impacts on friendships. Further, psychosocial interventions for young adult caregivers, such as the ME-WE program (MEWEproject, 2022), have shown promise in supporting the mental health and peer relationships of young adult caregivers.

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### CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

### DATA AVAILABILITY STATEMENT

The UK Household Longitudinal Study is available via the UK Data Service, free of charge to researchers <https://ukdataservice.ac.uk/>

### ETHICS STATEMENT

The University of Essex Ethics Committee provided ethical approval for all data collection on the UKHLS.

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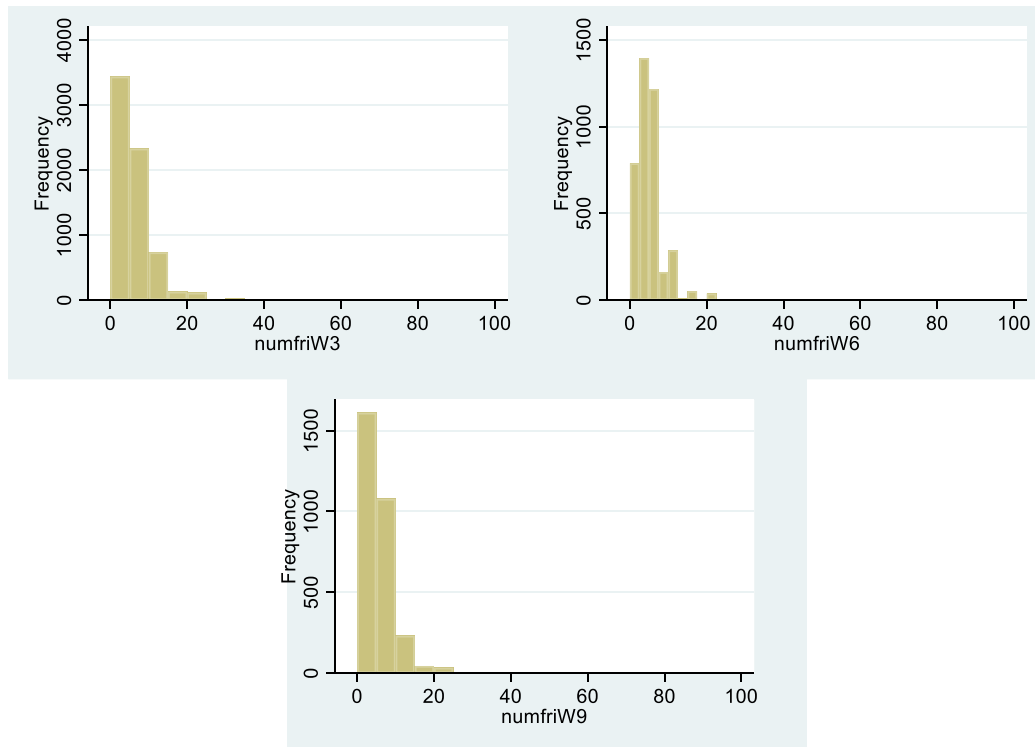
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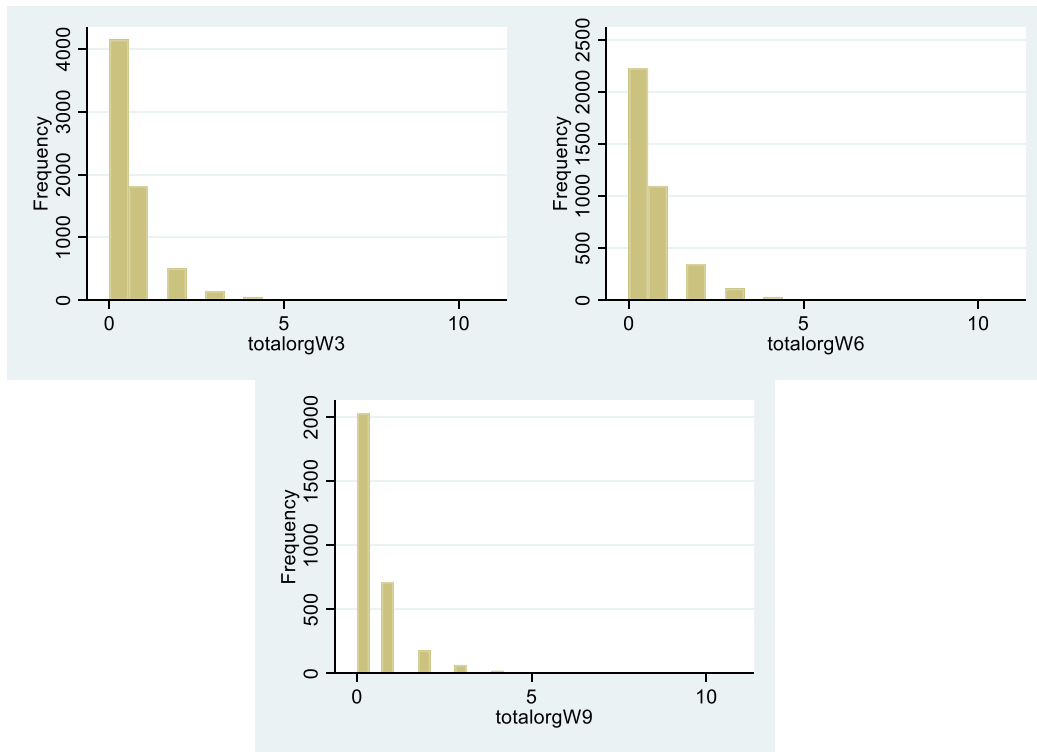
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## APPENDIX A: DISTRIBUTION OF NUMBER OF FRIENDS AND PARTICIPATION IN ORGANIZED SOCIAL ACTIVITY VARIABLES

The number of friends variable at waves 3, 6, and 9 was retained as a count variable, given the range of values that this variable took in our sample. However, the number of organizations that participants attended was categorized into 0, 1, or 2+ activities given that there were very few people who participated in more than 2 activities in each wave (Figures A1 and A2).



**FIGURE A1** Distribution of the number of friends reported in waves 3, 6, and 9 in the analytic sample. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]



**FIGURE A2** Distribution of the number of organizations reported in waves 3, 6, and 9 in the analytic sample. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

**APPENDIX B: COMPLETE CASE ANALYSES**

These analyses are conducted on those participants with all variables observed ( $n = 2387$ ) (Tables B1 and B2).

**TABLE B1** Associations between caregiving and number of friends in the short- (W6) and longer-term (W9).

	Number of friends W6			<i>p</i> Value	Number of friends W9			<i>p</i> Value
	IRR	95% CI			IRR	95% CI		
Model 1—Crude association								
Caregiving	0.94	0.88	1.00	0.060	0.99	0.93	1.06	0.842
Caregiving hours								
Noncaregiver	Ref				Ref			
0–4 h/week	0.96	0.87	1.05	0.325	1.00	0.91	1.10	0.960
5+ h/week	0.91	0.83	1.01	0.065	0.96	0.87	1.06	0.403
Model 2—Adjusted for baseline number of friends (W3)								
Caregiving	0.95	0.89	1.02	0.174	1.02	0.95	1.09	0.652
Caregiving hours								
Noncaregiver	Ref				Ref			
0–4 h/week	0.98	0.90	1.07	0.671	1.04	0.94	1.14	0.472
5+ h/week	0.92	0.83	1.02	0.097	0.97	0.88	1.07	0.559
Model 3—Additionally adjusted for remaining covariates								
Caregiving	1.01	0.94	1.08	0.772	1.08	1.00	1.15	0.045
Caregiving hours								
Noncaregiver	Ref				Ref			
0–4 h/week	1.02	0.93	1.11	0.741	1.07	0.97	1.17	0.187
5+ h/week	1.00	0.91	1.11	0.982	1.06	0.96	1.18	0.257

Note: Model 1 is the crude association between caregiving and number of friends. Model 2 is the association between caregiving and number of friends adjusting for the number of friends at W3. Model 3 includes the number of friends at W3 plus all remaining covariates (sex, income, continuous age, number of children, partnership status, economic activity, self-rated health, and ethnicity).

Abbreviations: CI, confidence interval; IRR, incidence rate ratio; W, wave.

**TABLE B2** Associations between young adult caregiving and number of organized social activities participated in, in the short- and longer-term.

	Number of activities W6						Number of activities W9									
	1 activity versus 0			2 activities versus 0			1 activity versus 0			2 activities versus 0						
	RRR	95% CI	<i>p</i> Value	RRR	95% CI	<i>p</i> Value	RRR	95% CI	<i>p</i> Value	RRR	95% CI	<i>p</i> Value				
Model 1—Crude association																
Caregiving	0.77	0.55	1.08	0.135	0.75	0.48	1.18	0.213	0.80	0.56	1.15	0.228	1.18	0.75	1.87	0.478
Caregiving hours																
Noncaregiver	Ref				Ref				Ref				Ref			
0–4 h/week	0.75	0.47	1.18	0.213	0.68	0.37	1.27	0.229	0.97	0.61	1.54	0.906	1.26	0.69	2.33	0.451
5+ h/week	0.72	0.44	1.19	0.206	0.75	0.39	1.45	0.392	0.60	0.34	1.06	0.079	1.12	0.58	2.16	0.733
Model 2—Adjusted for baseline number of organized activities (W3)																
Caregiving	0.76	0.53	1.07	0.112	0.74	0.46	1.19	0.215	0.81	0.56	1.16	0.243	1.21	0.75	1.93	0.434
Caregiving hours																
Noncaregiver	Ref				Ref				Ref				Ref			
0–4 h/week	0.72	0.45	1.16	0.174	0.64	0.33	1.23	0.182	0.97	0.61	1.55	0.903	1.26	0.67	2.37	0.467
5+ h/week	0.71	0.43	1.18	0.190	0.77	0.39	1.53	0.456	0.61	0.34	1.08	0.088	1.17	0.60	2.30	0.641
Model 3—Additionally adjusted for remaining covariates																
Caregiving	0.89	0.62	1.28	0.532	0.86	0.53	1.41	0.550	0.94	0.65	1.37	0.757	1.28	0.78	2.09	0.333
Caregiving hours																
Noncaregiver	Ref				Ref				Ref				Ref			
0–4 h/week	0.78	0.48	1.27	0.318	0.65	0.33	1.28	0.213	1.07	0.66	1.72	0.791	1.26	0.66	2.41	0.492
5+ h/week	0.93	0.55	1.58	0.783	1.06	0.52	2.16	0.883	0.77	0.43	1.38	0.377	1.34	0.66	2.72	0.414

*Note:* Model 1 is the crude association between caregiving and number of activities. Model 2 is the association between caregiving and number of activities adjusting for the number of activities at W3. Model 3 includes the number of activities at W3 plus all remaining covariates (sex, income, continuous age, number of children, partnership status, economic activity, self-rated health, and ethnicity).

Abbreviations: CI, confidence interval; RRR, relative risk ratio; W, wave.



**APPENDIX C: RESULTS FOR THOSE WITH BOTH OUTCOMES OBSERVED**

These analyses were conducted on those with wave 6 and 9 outcomes observed for each outcome. There were 2523 participants with number of friends reported in waves 6 and 9. There were 2436 participants with number of organized social activities participated in reported in waves 6 and 9 (Tables C1 and C2).

**TABLE C1** Associations between caregiving and number of friends in the short- (W6) and longer-term (W9).

	Number of friends W6			p Value	Number of friends W9			
	IRR	95% CI			IRR	95% CI	p Value	
Model 1—Crude association								
Caregiving	0.95	0.89	1.02	0.149	1.00	0.93	1.07	0.952
Caregiving hours								
Noncaregiver	Ref				Ref			
0–4 h/week	0.98	0.90	1.07	0.661	1.02	0.94	1.12	0.606
5+ h/week	0.92	0.83	1.01	0.074	0.95	0.86	1.04	0.257
Model 2—Adjusted for baseline number of friends (W3)								
Caregiving	0.97	0.91	1.04	0.378	1.02	0.96	1.09	0.535
Caregiving hours								
Noncaregiver	Ref				Ref			
0–4 h/week	1.01	0.92	1.09	0.908	1.05	0.97	1.15	0.242
5+ h/week	0.93	0.84	1.02	0.123	0.96	0.87	1.06	0.411
Model 3—Additionally adjusted for all remaining covariates								
Caregiving	1.02	0.96	1.09	0.488	1.02	0.96	1.09	0.488
Caregiving hours								
Noncaregiver	Ref				Ref			
0–4 h/week	1.04	0.95	1.13	0.414	1.04	0.95	1.13	0.414
5+ h/week	1.00	0.91	1.11	0.939	1.00	0.91	1.11	0.939

Note: Model 1 is the crude association between caregiving and number of friends. Model 2 is the association between caregiving and number of friends adjusting for the number of friends at W3. Model 3 includes the number of friends at W3 plus all remaining covariates (sex, income, continuous age, number of children, partnership status, economic activity, self-rated health, and ethnicity).

Abbreviations: CI, confidence interval; IRR, incidence rate ratio; W, wave.

**TABLE C2** Associations between young adult caregiving and number of organized social activities participated in, in the short- and longer-term.

	Number of activities W6						Number of activities W9									
	1 activity versus 0			2 activities versus 0			1 activity versus 0			2 activities versus 0						
	RRR	95% CI	p Value	RRR	95% CI	p Value	RRR	95% CI	p Value	RRR	95% CI	p Value				
Model 1—Crude association																
Caregiving	0.77	0.55	1.07	0.117	0.74	0.47	1.16	0.185	0.79	0.55	1.13	0.197	1.21	0.77	1.90	0.400
Caregiving hours																
Noncaregiver	Ref				Ref				Ref				Ref			
0–4 h/week	0.75	0.48	1.18	0.164	0.67	0.36	1.25	0.209	0.96	0.60	1.52	0.855	1.34	0.74	2.42	0.329
5+ h/week	0.70	0.43	1.16	0.206	0.74	0.38	1.41	0.358	0.59	0.34	1.04	0.069	1.10	0.58	2.12	0.765
Model 2—Adjusted for baseline number of organized activities (W3)																
Caregiving	0.75	0.53	1.05	0.093	0.72	0.45	1.16	0.175	0.79	0.55	1.14	0.208	1.24	0.78	1.96	0.373
Caregiving hours																
Noncaregiver	Ref				Ref				Ref				Ref			
0–4 h/week	0.72	0.45	1.15	0.165	0.62	0.32	1.18	0.146	0.95	0.60	1.52	0.832	1.32	0.72	2.44	0.371
5+ h/week	0.69	0.42	1.15	0.157	0.76	0.39	1.50	0.430	0.60	0.34	1.06	0.080	1.17	0.60	2.28	0.652
Model 3—Additionally adjusted for all remaining covariates																
Caregiving	0.87	0.61	1.23	0.424	0.83	0.51	1.35	0.456	0.93	0.64	1.35	0.693	1.31	0.80	2.13	0.278
Caregiving hours																
Noncaregiver	Ref				Ref				Ref				Ref			
0–4 h/week	0.77	0.48	1.24	0.288	0.62	0.32	1.21	0.164	1.04	0.65	1.68	0.865	1.31	0.69	2.46	0.406
5+ h/week	0.88	0.52	1.49	0.638	1.04	0.51	2.11	0.921	0.76	0.42	1.37	0.363	1.35	0.67	2.74	0.400

Note: Model 1 is the crude association between caregiving and number of activities. Model 2 is the association between caregiving and number of activities adjusting for the number of activities at W3. Model 3 includes the number of activities at W3 plus all remaining covariates (sex, income, continuous age, number of children, partnership status, economic activity, self-rated health, and ethnicity).

Abbreviation: CI, confidence interval; RRR, relative risk ratio; W, wave.