

Does providing informal care in young adulthood impact educational attainment and employment? Evidence from the UK Household Longitudinal Study

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Abstract

Most research on the effects of caring has focused on older spouses or working-age carers providing care for older people, but providing care in early adulthood may have longer-term consequences given the importance of this life stage for educational and employment transitions. This study aims to investigate the impact of informal care in early adulthood on educational attainment and employment in the UK, and to test whether these associations differ by gender or socioeconomic circumstances. Data are from young adults (age 16-29 at first interview, n=27,209) in the UK Household Longitudinal Study wave 1 (2009/11) to wave 10 (2018/2020). Carers are those who provide informal care either inside or outside household. We also considered six additional aspects of caring, including weekly hours spent caring, number of people cared for, relationship to care recipient, place of care, age at which caring is first observed, and duration of care. Logistic regression was used to analyse the association with educational qualifications. Cox regression was used to analyse the association with employment transitions, and piecewise models were used to disentangle the short and long-term effects of caring on employment amongst carers. We found that young adult carers were less likely to obtain a university degree and to enter employment, and more likely to enter unemployment and exit from paid employment, compared to young adults who did not provide care. Caring in young adulthood may influence employment both immediately and in the longer term. In terms of care characteristics, weekly hours spent caring is negatively associated with the likelihood of obtaining a degree qualification and being employed. Caring at age 18/19 may have a stronger impact on obtaining a university degree than caring at other ages. Providing care after age 22 negatively impacted employment outcomes. Having a degree qualification and parental educational attainment buffered the negative impact of providing care on employment. Our results highlight the importance of supporting the needs of young adults providing informal care while making key life course transitions.

Keywords

informal care; young adult carers, education, employment, UKHLS

1. Introduction

Unpaid family carers are an increasingly important group of social care providers in many countries. Increased longevity has led to a growing need for care for older people, and, at the same time, delayed childbearing means there is a growing number of young adults with older parents requiring care, as well as more adult grandchildren caring for surviving grandparents (Grundy & Henretta, 2006; Spijker & Zueras, 2018). However, most research on the effects of caring has focused on older spouses or working-age carers providing care for older people. Research and policy have often overlooked the many young adults who also take on unpaid (informal) caring responsibilities for their families and other people.

Becker and Becker (2008, page 6) first conceptualised 'young adult carers' as individuals aged 18-24 "who provide or intend to provide care, assistance or support to another family member on an unpaid basis." Since then, the term 'young adult carers' has been widely used in the literature. Different age ranges have been used for identifying a carer as a 'young adult carer' (S. Becker & Sempik, 2019; Dellmann-Jenkins et al., 2000; Fruhauf & Orel, 2008; Young et al., 2006). Here, we consider young adult carers to be young adults aged 16-29. The 16-29 age range reflects the fact that 'young adulthood' has been extended as a life course period over the last few decades as a result of later average ages at which people complete full-time education and leave parental home and delayed transitions to stable work, partnership, and parenthood (Syed, 2015). For example, in England and Wales, the average age of a first-time mother was 30.7 in 2020 compared with 26 in the early 1970s (Clark D, 2020; ONS, 2021), and the first age at which more than half of young people had left the parental home was 23 in 2017 compared to 21 two decades earlier (ONS, 2019).

Young adults providing unpaid care for family members or others is not uncommon. A recent study showed that about 9% of young adults in the UK provide care to family members or other people, and this prevalence of young adult caring was stable between 2009 and 2019 (Di Gessa et al., forthcoming). In 2019, one in 10 carers in the UK were young adults (ONS, 2020). The responsibilities of young adult carers include personal care (e.g., nursing), instrumental care (e.g., mobility assistance, housework, making telephone calls), and emotional support (e.g., providing company, supervision, and paying close attention to the mental and emotional status of the recipient of caring) (Warren, 2007a).

Young adult caring occurs at a time when young people are seeking to complete compulsory education and establish themselves in the job market (Shanahan, 2000). Exiting education and entering employment are important life course transitions for young people and are important mechanisms for achieving socioeconomic advantage and wellbeing over the life course (Schulenberg et al., 2004). Caring responsibilities during young adulthood are likely to have both immediate and longer-term effects given the key transitions generally made in this life stage. However, a relatively small body of literature has focused on how caring influences the education and employment of young adults, and current evidence either comes from qualitative findings (e.g., Rose & Cohen, 2010) or is limited to cross-sectional descriptive results (e.g., J Sempik & S Becker, 2013, 2014) or does not consider the characteristics of caring ((Brimblecombe et al., 2020). Using a large, nationally representative household panel study, we aim to investigate how caring and caring characteristics are associated with educational qualifications and employment transitions among UK young adults.

1.1 Young adulthood as key life course period for education and employment transitions

Research from life course theory has suggested that education provides the foundation for the accumulation of human capital (e.g., skills and knowledge), social capital (e.g., networks), psychophysical capital (e.g., physical and mental health), and personal capital (e.g., efficacy and identity) across the life course (Elder, 1994; O'Rand, 2006). A large number of previous studies have demonstrated how education contributes to differentials in socioeconomic attainment across the life course. For instance, early school leaving and a lack of educational qualifications have been linked with less continuous paid employment in adulthood, routine occupations, low household income, and less wealth throughout adulthood (McDonough et al., 2015; Pailhé et al., 2013). Higher educational qualifications, such as a university degree qualification, often increase the chance of being employed, entering the most advantaged occupational classes, and earning higher salaries (Blundell et al., 2005; Card, 1999). Besides social-economic disadvantages, those with fewer educational qualifications are also more likely to have poorer mental health and wellbeing both in adulthood and later life than those with higher education (Dalgard et al., 2007).

Employment is another key life course mechanism for achieving socioeconomic advantage and wellbeing (Diprete & Eirich, 2006). Employment provides a significant source of identity formation, social status, participation in society, and access to financial resources (Dannefer, 2003; Luyckx et al., 2008). In contrast, non-employment (either unemployed or not looking for a job) may reduce human capital and confidence (Gangl, 2006; Luijkx & Wolbers, 2009). The experience of early non-employment may leave scars on future employment by restricting opportunities to develop skills and confidence in the workplace and the stigmatisation of non-employment by prospective employers (Bratberg & Nilsen, 2000). Empirical studies have shown that unemployment early on in adulthood increases the risk of future unemployment (Schmillen & Umkehrer, 2017). There are also long-term mental health scarring effects of youth unemployment (Strandh et al., 2014). What is more, young people who have work interruptions, for example, due to family obligations or childbirth, often face a 'wage penalty' when they return to work (Aisenbrey et al., 2009; Staff & Mortimer, 2012). Overall, research has suggested that lack of employment in young adulthood is likely to lead to "permanent scars rather than temporary blemishes" (Bell & Blanchflower, 2011). On the contrary, those who have strong ties to the labour market during early adulthood are often able to stay in the labour force full time until and beyond age 60 (Wahrendorf et al., 2018) and achieve higher socioeconomic attainment in later life (Xue et al., 2020), although these analyses used historic cohorts and the situation is likely to be different today (Glaser et al., 2022).

1.2 The role of young adult caring in education and employment transitions

As discussed above, becoming an adult usually requires the navigation of several key status transitions. While this is true for many young adults, there are additional challenges for those young adults who also have caring responsibilities. During compulsory and post-compulsory education, while most students seek to embrace an active social life, young adult carers juggle academic demands and caring responsibilities. Caring responsibilities may reduce the time to complete assignments, participate in group activities, or prepare for exams (Day, 2015). Also, planning or thinking about family members' specialised care needs or worrying about the health condition of loved ones is potentially burdensome and exhausting for young adult carers, and thus, many of them may feel less able to concentrate on their studies. More importantly, leaving home for education is especially problematic for many young adult carers if they are primary

carers or their loved one is not provided with appropriate care while they are away (Moore, 2005; Warren, 2007b).

The opportunity to establish themselves in the job market is another primary difference between young adult carers and their non-carer peers. Non-carers typically have the freedom to pursue their work (Day, 2015), while for young adult carers, particularly those who adopt primary caring roles, employment opportunities are limited due to conflicting demands between caring responsibilities and the workplace (Hamilton & Adamson, 2012). For working young adult carers, caring commitment may make them miss out on job promotions or lead to insufficient support at work (Pope et al., 2022). Caring responsibilities may also interfere with long-term work goals for young adult carers due to the unpredictable nature of the care recipient's health conditions (Cass et al., 2009; Hamilton & Adamson, 2012).

1.3 Studies on the educational and employment consequences of young adult caring

Young adults may develop some essential life skills from their caring experience, and some may have a sense of satisfaction by providing care. Still, other aspects of their lives may be negatively affected. Studies have highlighted the vulnerability of young adult carers, with caring responsibilities at a young age being connected to adverse experiences such as shame, worry, isolation, and tiredness (Banks et al., 2010; Barry, 2011; Frech et al., 2021). Regarding the potential impact of young adult caring on education, previous research has been qualitative or cross-sectional in small samples of carers. A qualitative study with three young adult carers in the UK revealed that when compared with non-carers, young adult carers faced a number of barriers to attending higher education (Kettell, 2018). A similar qualitative study in Australia found that young adult carers reported deviating from their academic study due to the competing caring roles (Day, 2019). Cross-sectional quantitative results from the UK showed that 16% of young adult carers were considering dropping out of college or university (J Sempik & S Becker, 2013), but it was not possible to compare the figure with the non-carers due to the design of the study which only interviewed carers. Interestingly, cross-sectional descriptive figures from Australia showed that young adult carers were 7% more likely to have post-secondary education qualifications than non-carers, but this study acknowledged that this figure was unreliable due to the small sample size of carers (N=62)(Cass et al., 2009).

Regarding the association between care and employment among young adults, most evidence comes from qualitative research or quantitative cross-sectional studies. For instance, a qualitative study from Australia found that young adult carers, regardless of their employment status, all expressed concerns about the difficulty of combining work and care (Hamilton & Adamson, 2012). A small-scale survey of 77 UK young adult carers who had left school showed that almost half were unemployed (J Sempik & S Becker, 2014). To our knowledge, there is only one longitudinal study assessing the association between young adult caring and employment. Using two waves of the UK Household Longitudinal Study, (Brimblecombe et al., 2020) found that young adults who provided care at baseline (2014/16) were less likely to be in employment at follow-up (2015/17) compared to young people who were not providing care at baseline. This study only focused on whether respondents provided care or not and did not assess how caring characteristics, such as duration and intensity, influence young adult carers' employment.

Research focusing on mid or older age carers has highlighted the significance of the intensity of caring, and it has shown that providing long hours of care is particularly associated with labour force exits (Gomez-Leon et al., 2019). The relationship with the caring recipient or the

place of caring is another potential moderating factor that has been shown to influence the association between caring and employment among mid-life or older adults (Carr, Murray, et al., 2018; Dentinger & Clarkberg, 2016). However, in the young adult caring literature, no longitudinal research has explored how the extent (e.g., the intensity and duration of caring) or the context (e.g., the recipient and place of caring) of caring responsibilities influence the association between caring and education or employment in young adults. Moreover, the age of providing care may be significant for young adults, as some key events, such as entering university, exiting full-time education, and entering employment, typically happen at normative ages.

Furthermore, gender norms regard men as traditional breadwinners with less responsibility for unpaid family obligations than women (McMunn et al., 2020). Studies from older or midlife carers have shown that women are more likely than men to provide care and to care more intensively (Cohen et al., 2019; Navaie-Waliser et al., 2002), with some evidence suggesting women are more likely than men to reduce work hours or leave the labour market in response to care (Carr, Fleischmann, et al., 2018; Ciccarelli & van Soest, 2018). For young adults, cross-sectional results from the UK 2001 Census showed that young men providing 20+ hours of care per week were three times more likely not to work than to work full-time, compared to those providing less or no care (combined into one group), while the equivalent figure for young female carers was nearly four times more likely (Young et al., 2006). However, such cross-sectional studies cannot test the temporality between care and employment. For example, women are less likely to work full time than men (Connolly et al., 2016) and thus may be more likely to pick up the caring responsibility. The gender difference found in cross-sectional evidence may represent reverse causation. However, the potential gender differences in responding to care in early adulthood have not been investigated in longitudinal studies.

Young adult carers come from all socioeconomic and cultural backgrounds. However, some research suggests that young people are more likely to be thrown into informal caring roles when formal caring services are not accessible or affordable. Several studies have found that young adult carers are more likely to live in socioeconomically disadvantaged households than non-carers (Cass et al., 2009; Young et al., 2006; Di Gessa et al., forthcoming) and young adults are also likely to have fewer material resources than working-age or older carers (Schneider, 2010). Socioeconomic circumstances may be essential for young adult carers when they pursue education and work while shouldering care responsibilities, but no quantitative research has assessed how socioeconomic circumstances interact with the effect of young adult caring on education or employment.

1.4 This study

Understanding whether and how caring influences young people's opportunities for pursuing education and establishing themselves in the job market is critical in supporting young adult carers. Our study aimed to examine the relationship between providing care and educational qualifications and employment transitions among young adults aged 16 to 29 from a nationally representative household panel study in the UK and understand how the caring characteristics influence the above associations. To inform which young adult carers are particularly affected, we also tested whether these associations differ by gender or socioeconomic circumstances.

2. Method

2.1 Data

Data for this study come from the Understanding Society, also known as the UK Household Longitudinal Study (UKHLS). It is a nationally representative longitudinal study, which started in 2009 and interviewed around 40,000 households. The survey is multi-topic, and each wave covers a range of social, economic, health, and behavioural factors from every household member. Participants have been surveyed annually, and there are 11 waves currently available. We used wave 1 (2009/11) to wave 10 (2018/20) for this study, as wave 11 (2019/21) was mainly conducted during the covid pandemic. Thus the nature of caring (our exposure) may differ from other waves due to the national lockdowns. The employment status (one of our interested outcomes) is also less comparable to previous waves due to furloughing scheme and self-employment grants introduced during the pandemic.

At wave 1, 82% of individuals from (wave specific) eligible households completed the full interview, but this percentage gradually reduced to 75% by wave 10. The survey procedures were approved by the Ethics Committee of University of Essex, and data is available to researchers via the UK Data Service. More details of the procedures can be found in the User Guide (Institute for Social and Economic Research, 2021).

Our study focused on early adulthood, and we defined people aged 16-29 as young adults. In the UKHLS, those aged 16 and over were invited to participate in the adult survey, and questions for caring were asked. This means that young people could enter the adult survey at different waves, as they reach age 16 at different times. Therefore, we pooled all age-eligible (age 16-29 at first interview) young adults across waves 1 to 10. Our eligible analytic sample were those age-eligible young adults who have answered the caring (yes/no) questionnaire in at least one wave (and up to 10 waves) of the adult survey. See the characteristics of the eligible sample (n=27,209) in Table 1. Our study involved several different outcomes, and we then drew on several different analytic sample types based on different analytical methods (See 2.5 Analytic methods).

2.2 Measures of caring characteristics

At every wave, care provision was identified by using the question "*Is there anyone living with you who is sick, disabled or elderly whom you look after or give special help to (for example a sick, disabled or elderly relative/husband/wife/friend etc.)?*", and "*Do you provide regular service or help for any sick, disabled or elderly person not living with you?*". We defined 'carers' as those who answered yes to either of these questions in one or more waves between age 16 and 29, and 'non-carers' as those who never provided care (neither inside nor outside the household) at any wave between age 16 and 29.

In addition to a binary variable indicating whether respondents cared for someone or not, we considered six additional aspects of caring, including weekly hours spent caring, number of people caring for, relationship to care recipient, place of care (inside or outside the household), age of care (first observed), and duration of care. In detail, we generated the age when providing care (range 16 - 29 years old, every two years per category) and duration of care (1; 2; 3; 4 waves or more) based on the yes/no caring information across waves. If respondents answered "Yes" to the care question, they were then asked the total number of people caring for, their relationship to each care recipient, and total weekly hours spent caring for all recipients, at every wave. For weekly hours, responses were given on a 7-point scale from 0–4 hours to more

than 100 hours per week. Due to small cell counts at the upper extremes of this scale, we reduced this to five categories (0-4; 5-9; 10-19; 20-34; 35 or more hours per week). For people who provided care at more than one wave, we averaged the weekly hours and number of people caring for across all caring waves. The recipient of care could be parents, grandparents, the partner, siblings, children, other relatives (such as uncles or aunts), and other non-relatives (such as friends or neighbours or clients of voluntary organisations). We combined caring for a partner, sibling, child, other relatives, and other non-relatives due to their small percentages (ranging from 5% to 8% of carers). We then created three separate binary variables (to allow for multiple care recipients either with the same wave or across waves) that captured ever cared for 'a parent', 'a grandparent,' or 'anyone else' in any wave between age 16-29.

2.3 Measures of outcomes

Educational attainment outcome

To assess the education attainment outcome, we used the self-reported highest educational qualification across waves. We investigated associations between care and the range of educational outcomes but found the strongest association for those obtaining a university degree. Therefore, we used a dichotomous education outcome degree-no degree here (and showed the results for obtaining other qualifications by care provision in Appendix Table S1).

Employment transition outcomes

For investigating employment transition outcomes, three transitions were considered: entry into paid employment, entry into unemployment, and exit from paid employment. Participants were asked which economic activity best describes their current employment situation at each wave. We considered 'in paid employment' as those who reported 'paid employment (full-time or part-time),' 'self-employed' or 'on maternity leave' as their employment situations. 'In unemployment' is based on those who self-reported as 'unemployed.'

2.4 Measures of other covariates

Covariates include sex, ethnicity, household income, parental education and occupational class, and all the covariates were measured at the baseline (i.e., the wave when first interviewed). Ethnicity is grouped into White; Black; Indian; Pakistani; Bangladeshi; other Asian/other. We used quintiles of household income, and household income was measured by monthly total household net income divided by the OECD equivalence scale (Hagenaars et al., 1994). Both mother's and father's highest educational qualifications and occupational class when the participant was age 14 were included in the model, separately. Parental occupational class was measured by the National Statistics Socio-economic Classification three-class version (managerial/professional, intermediate, and routine/manual). Parental education was measured by degree or higher; further qualifications or certificates (e.g., City & Guilds); some qualifications or certificates; no qualification. We also had a parent 'not in the household at age 14' category based on participants' self-reports.

2.5 Analytic methods

Educational attainment outcome

Logistic regression was used to analyse the association between caring and achieving educational qualifications. In the UK, students normally enter university as undergraduates from age 18 onwards (although the minimum legal age is 17) and it typically takes at least three years to complete (Baskerville, 2013). Therefore, we excluded those younger than age 21 when

last interviewed from the eligible analytic sample as they were too young to have finished a university degree" (Total sample size is 18,891 after excluding missing data on education). Models adjusted for sex, ethnicity, household income, and parental occupational class and education. To account for the different chances of being observed to provide care, the total number of waves participated between age 16 and 29 was also adjusted. Other aspects of caring characteristics (six in total) were then tested in separate logistic regression models.

Employment transition outcomes

For investigating the association between caring and employment transitions, Cox proportional hazards regression models were used, having established that the proportional hazards assumption was not violated. Cox regression builds a predictive model for time-to-event data and thus, can model whether there is a difference between carers and non-carers in their age of making an employment transition (Cox, 1972). We modelled the hazards of entering paid employment and unemployment and exiting from paid employment in separate Cox regression models. Each transition was considered as an 'event occurrence' in the Cox regression models, and the age of 'event occurrence' was defined as the participant's age when the event of interest first happened. Participants whose event of interest did not occur by the end of follow-up (wave 10) or who left the study before 'event occurrence' were treated as right-censored.

For examining transitions into paid employment, we only included those not already in employment at baseline (Total sample size is 12,045). Similarly, for analysing transitions into unemployment, we only included those who were not unemployed at baseline (Total sample size is 17,925). For analysing exits from employment, only people working at baseline were included (Total sample size is 7,498). We used age as the timescale to account for age effects. In terms of covariates, sex, ethnicity, household income, and parental occupational class and education were also included in the models. We additionally adjusted for participants' own highest educational qualification (degree/other higher education/ A-level/ GCSE/ other/ no qualification). We adjusted for the birth year (categorical variable) to account for period effects on employment. In addition to whether young adults provided care, other aspects of caring characteristics were tested in separate Cox regression models.

All cox regression models were stratified by two age groups: those aged less than 23 when last interviewed and those aged 23 or plus when last interviewed. We chose 23 as the age by which most young adults are likely to have completed full-time education in the UK (ONS, 2016) By doing the stratified analysis, we tested whether caring is associated with employment outcomes differently for young people at different transition stages

Changes in employment among carers

Among carers, we additionally used piecewise logistic regression models to assess the probability of being employed before and after the uptake of care (Albert et al., 2016; Pastor & Guallar, 1998). Piecewise regression, also known as segmented regression, is a method in which the independent variable is partitioned into intervals, and a separate line segment is fit to each interval (Marsh & Cormier, 2001). Piecewise models have strengths in reducing the influence of unobserved characteristics by comparing carers themselves before and after the uptake of care. In addition, while the Cox regression models above tested the difference between carers and non-carers in their initial employment transitions, the piecewise models are able to disentangle the short and long-term effects of caring (Xue et al., 2017).

Only those who participated in the survey both before and at/after uptake of care were included (N=2114). The yearly prevalence of "in paid employment" was calculated and centred on the year of uptake of care. The piecewise employment trajectories had three segments: before uptake of care, at uptake of care (i.e., between the wave first report caring and the prior wave), and after uptake of care (i.e., from the second wave of uptake of care onwards). The segment 'at uptake of care' shows the potential immediate association between care and employment, and the segment 'after uptake of care' shows the longer-term associations. If care did not affect employment, we would expect the employment trajectories at/ after the uptake of care to follow the same pattern as before care.

In terms of covariates, sex, ethnicity, household income, parental occupational class and education, birth year, and the number of waves participated were included. Age of uptake care was additionally adjusted, which effectively adjusted for age at each time point in the trajectory, as the analysis was centred on the age of caring. Again, to test whether caring is associated with employment differently for young people at different transition stages, all models were stratified by two age groups: those aged less than 23 when first observed caring and those aged 23 or plus when caring.

Effect modifiers

All the analyses above were tested for sex and socioeconomic circumstances (ethnicity, parental education and occupational class, household income) as effect modifiers, and stratum-specific associations were shown where results suggested effect modification. Own education was additionally tested for effect modification for employment outcomes.

2.4 Multiple imputation

In the eligible analytic young adult sample, the primary source of missing data came from parental education (28% missing), as such information was only collected at wave1 and then at wave 2 for those who first entered the adult interview at wave 2, and then at wave 6 for the Immigrant and Ethnic Minority Boost Sample only. The percentage of missing data before multiple imputation is shown in Appendix Table S2. Missing data on covariates and aspects of caring were then imputed using multiple imputation by chained equations (MICE). Variables from the analyses (i.e., independent variables, outcome variables, and covariates), and weighting for study design were included in the imputation model. By default, MICE uses 10 burn-in iterations before drawing imputed values. The whole procedure was then repeated to produce 30 imputed data based on the rule of thumb that the number of imputations should be at least equal to the percentage (29.48%) of incomplete cases (White et al., 2011). In the final MICE step, the 30 estimates are combined into an overall estimate and a variance-covariance matrix using Rubin's rules (D. Rubin, 1987). In this final step, the imputed data have been applied to our eligible analytic young adult sample (n=27,209). After that, we excluded imputed outcome values before running regression models (von Hippel, 2007).

2.5 Sensitivity analysis

Unlike birth cohort studies, participants in household panel studies like the UKHLS were interviewed at different ages. In order to account for differential ages observed, we conducted a 'quasi-cohort' analysis for the education outcome by including people we observed from age 16 and who were followed up until age 21 or older. We only included those who were not providing informal care at baseline. For those who provide care in follow-up, we only included those who started providing care before age 21 (n=1819) to ensure that care happened before

the normative age for achieving a degree in the UK. Such a 'quasi-cohort' design enabled us to test the temporality of the association, and, by comparing young carers with their non-carer peers at the same age, we also solved the potential issues of unequal chances of being observed to provide care or to achieve educational qualifications.

3. Results

3.1 Descriptive results

Table 1. Socio-demographic characteristics by care status (young adults aged 16-29 when first interviewed).

	Non-carers (n=22730)	Carers (n=4479)	
	%	%	P for % difference
Women	51.0	58.0	<0.001
Ethnicity			<0.001
White	72.7	70.0	
Black	8.5	7.0	
Indian	5.0	4.7	
Pakistani	5.0	8.3	
Bangladeshi	3.5	6.6	
Asian/other	5.4	3.5	
Mother's occupational class			<0.001
Professional/managerial	20.0	13.2	
Intermediate	13.0	8.6	
Routine/manual	32.4	28.8	
Not working	32.9	47.4	
Not in household	1.8	2.0	
Father's occupational class			<0.001
Professional/managerial	28.6	17.6	
Intermediate	10.6	7.9	
Routine/manual	37.0	35.4	
Not working	10.3	20.6	
Not in household	13.5	18.6	
Mother's education			<0.001
Degree or higher	17.5	11.0	
Further qualifications or certificates	17.6	16.7	
Some qualifications or certificates	39.3	38.6	
No qualification	23.8	31.8	
Not in household	1.8	2.0	
Father's education			<0.001
Degree or higher	18.6	11.7	
Further qualifications or certificates	14.4	13.4	
Some qualifications or certificates	31.2	29.3	
No qualification	22.3	27.1	
Not in household	13.5	18.6	
Household income quintiles			<0.001
Lowest	19.2	23.9	
2	18.9	25.8	
3	19.8	21.0	

4	20.6	17.0	
Highest	21.5	12.3	
Number of waves participated between age 16 and 29			<0.001
1	33.8	14.8	
2	19.9	14.2	
3	13.2	14.2	
4	9.9	12.6	
5	7.6	11.5	
6	5.2	9.4	
7	3.7	7.1	
8	3.1	7.1	
9	2.4	5.9	
10	1.3	3.4	

^a Based on the eligible analytic sample (i.e., young adults who have answered the caring questionnaire in at least one wave of the adult survey). Data are multiply imputed.

Socio-demographic characteristics of our eligible analytic sample by their caring status are shown in Table 1. Among young adults in our data, 19.7% were carers. Compared to non-carers, carers were more likely to reside in a more socioeconomic disadvantaged household, including lower household income and lower parental educational qualification and occupational class. For example, only 12% of carers resided in a family with the top quintile of household income, compared to 22% of non-carers. Nearly one in two carers' mothers were not working when the carer was age 14, compared to one in three of the non-carers. Carers were also less likely to live with their father when they were age 14 (18.6% not living with a father, vs. 13.5%) than non-carers. In terms of ethnicity, carers were slightly more likely to be Pakistani or Bangladeshi than non-carers. Results also showed that carers had participated in more waves between age 16 and 29 than non-carers, suggesting the importance of accounting for the number of participated waves in the following regression models.

Table 2. Caring characteristics among young adult carers (aged 16-29 when first interviewed)

	Carers (n=4479) %	Carers age last interviewed<23 (n=1892) %	Carers age last interviewed>=23 (n=2587) %
Age of care (first observed)			
16/17	23.6	52.8	7.0
18/19	14.8	27.1	7.8
20/21	12.9	16.0	11.1
22/23	11.6	4.2	15.8
24/25	11.9		18.6
26/27	12.0		18.8
28/29	13.3		20.9
Duration of care			
1	57.6	67.8	51.8
2	20.5	19.7	20.9
3	10.0	7.5	11.5
4 or more years	11.9	5.1	15.9

Weekly hours spent caring			
4 hours or less	45.7	48.1	44.4
5 - 9 hours	19.2	20.7	18.3
10 - 19 hours	15.6	15.8	15.5
20 - 34 hours	10.0	8.6	10.8
35 or more	9.5	6.9	10.9
Number of people caring for			
1	90.4	89.6	90.9
2	8.0	8.1	7.9
3 or more	1.6	2.3	1.2
Place of care			
Inside household only	41.9	49.0	37.8
Outside household only	45.5	39.6	48.8
Inside and outside	12.7	11.4	13.4
Recipient of care			
Parent (% yes)	45.1	43.9	45.8
Grandparent (% yes)	34.6	36.7	33.4
Anyone else (% yes)	36.6	31.1	39.8

^a Based on multiply imputed data.

In terms of caring characteristics (Table 2), 46% of young adult carers spent less than 5 hours per week caring, and nearly 60% of young adult carers cared for only one wave. Despite the relatively low level of caring responsibilities for the majority of young adult carers, we observed that some young adult carers were shouldering a significant amount of caring responsibilities; for example, one in ten carers were caring more than 35 hours per week, and a fifth 20 hours or more, with 12% caring for four or more waves. Regarding the recipient of care, 45% cared for parent(s), 35% cared for grandparent(s), and 37% cared for anyone else. Ninety per cent of young carers only cared for one person. 46% of caring happened outside the household only. The age when first observed caring was evenly distributed (12-15% each age category) between age 18 and 29, but more people (24%) reported caring at age 16/17. The higher percentage of caring at age 16/17 may indicate that some children and teenagers have started caring before entering the adult survey at age 16. Compared to carers aged 23 or older, younger carers were more likely to start care at a younger age, to care inside the household, but with a shorter duration and less intensity.

3.2 Educational attainment outcome

The logistic regression results for the association between caring characteristics and having a degree are shown in Table 3. Carers were 36% less likely to have a degree qualification than non-carers (OR=0.64; 95% CI: 0.56, 0.72). The likelihood of obtaining a degree qualification decreased with the increasing number of hours caring per week. For example, compared to non-carers, those who cared for up to 4 hours per week were 23% less likely to have a degree qualification (95% CI: 0.65, 0.90), while those who cared for 35 hours or more per week were 77% less likely to have a degree qualification (95% CI: 0.15, 0.36). There was weak evidence suggesting that the association between providing care and degree achievement was stronger if caring at age 18/19, though confidence intervals often overlapped with other age groups. We

observed weak support for an association between increased duration of care and a reduced likelihood of obtaining a degree. The number of care recipients was negatively associated with obtaining a degree, although there were overlapping confidence intervals between the groups of the number of care recipients. In terms of place of care, inside household caring was associated with worse education outcomes than outside household caring, but this difference can be fully explained by the intensity of caring (intensity adjusted model not shown in tables). We didn't find much evidence to suggest the relationship to care recipients influenced the association between caring and education.

Table 3. Logistic regression results for the association between caring characteristics and having a degree (among young adults aged 16-29 when first interviewed and aged 21 or more when last interviewed)^a

	OR (N= 18,891)	95%CI	
Whether caring			
No care	ref		
Yes	0.64	0.56	0.72
Age of care (first observed)			
No care	ref		
16/17	0.67	0.48	0.93
18/19	0.45	0.31	0.65
20/21	0.67	0.50	0.91
22/23	0.72	0.54	0.98
24/25	0.60	0.45	0.79
26/27	0.58	0.43	0.78
28/29	0.72	0.55	0.93
Duration of care			
No care	ref		
1	0.67	0.57	0.79
2	0.62	0.47	0.81
3	0.57	0.41	0.79
4 or more years	0.59	0.45	0.77
Weekly hours of care			
No care	ref		
4 hours or less	0.77	0.65	0.90
5 - 9 hours	0.67	0.52	0.88
10 - 19 hours	0.56	0.42	0.76
20 - 34 hours	0.37	0.24	0.58
35 or more	0.23	0.15	0.36
Number of people caring for			
No care	ref		
1	0.64	0.57	0.73
2	0.57	0.38	0.86
3 or more	0.41	0.10	1.57
Place of care			
No care	ref		
Inside household only	0.51	0.41	0.63

Outside household only	0.72	0.61	0.84
Inside and outside	0.60	0.43	0.84
Recipient of care			
Care grandparent			
No	ref		
Yes	0.80	0.66	0.96
Care parent			
No	ref		
Yes	0.75	0.63	0.89
Care anyone else			
No	ref		
Yes	0.61	0.50	0.74

^a Based on multiply imputed data. All analyses were weighted and adjusted for sex, ethnicity, mother and father's occupational class, mother and father's education, household income, and number of waves participated. Different care characteristics were not mutually adjusted but in separate regression models.

3.3 Employment transition outcomes

Employment entry

Table 4 shows the Cox regression results for the association between caring and entering into employment. A lower likelihood of entering employment was only found when the caring happened at age 22/23 or later, with carers on average having a 12% lower likelihood of entering employment. For those younger than age 23, care reduced their likelihood of entering employment only when they spent 35 or more hours of care every week. For those aged 23 or older, caring for 10 hours or more was already negatively associated with their employment. We found weak support for the associations with the duration of care or number of people caring for, and also weak evidence for the role of relationship to the recipient.

Table 4. Cox regression results for the association between caring and entering into employment stratified by two age groups (among young adults aged 16-29 when first interviewed and were not already in employment at baseline)^a

	Age last interviewed < 23 (n=6347)			Age last interviewed ≥ 23 (n=5698)		
	HR	95%CI		HR	95%CI	
Whether caring						
No care	ref			ref		
Yes	1.05	0.93	1.19	0.88	0.79	0.96
Age of caring (first observed)						
No care	ref			ref		
16/17	1.01	0.87	1.19	1.14	0.97	1.34
18/19	1.20	0.95	1.52	0.94	0.73	1.21
20/21	1.02	0.78	1.33	1.01	0.84	1.22
22/23	--	--	--	0.76	0.61	0.95
24/25	--	--	--	0.83	0.65	1.07
26/27	--	--	--	0.63	0.48	0.82

28/29	--	--	--	0.76	0.54	1.05
Duration of caring						
No care	ref			ref		
1	1.18	1.03	1.36	0.92	0.82	1.03
2	0.84	0.63	1.13	0.86	0.70	1.05
3	1.06	0.75	1.49	0.76	0.61	0.96
4 or more years	0.89	0.67	1.19	0.86	0.70	1.07
Intensity of caring						
No care	ref			ref		
4 hours or less	1.11	0.93	1.32	0.98	0.86	1.10
5 - 9 hours	1.18	0.95	1.45	0.98	0.82	1.18
10 - 19 hours	1.13	0.89	1.45	0.72	0.57	0.92
20 - 34 hours	0.63	0.38	1.05	0.77	0.59	1.00
35 or more	0.47	0.23	0.98	0.50	0.35	0.72
Number of people caring for						
No care	ref			ref		
1	1.06	0.93	1.21	0.88	0.80	0.97
2 or more	1.06	0.79	1.42	0.85	0.63	1.16
Place of caring						
No care	ref			ref		
Inside household only	1.03	0.86	1.22	0.79	0.67	0.93
Outside household only	1.12	0.93	1.34	1.02	0.90	1.14
Inside and outside	0.90	0.67	1.21	0.68	0.55	0.84
Recipient						
Care grandparent						
No	ref			ref		
Yes	1.06	0.88	1.28	0.998	0.88	1.14
Care parent						
No	ref			ref		
Yes	1.00	0.88	1.28	0.82	0.71	0.95
Care anyone else						
No	ref			ref		
Yes	0.97	0.79	1.17	0.84	0.73	0.96

^a Based on multiply imputed data. All analyses were weighted and adjusted for sex, ethnicity, mother and father's occupational class, mother and father's education, household income, own highest education qualification, and birth year. Different care characteristics were not mutually adjusted but in separate regression models.

Unemployment

For entering unemployment (Table 5), results were mainly consistent with the inverse of entering employment. For example, the association between care and entering unemployment was again concentrated amongst those aged 23 or older and those caring for ten hours or more. Carers had a 32% higher risk of entering unemployment than non-carers. A higher risk of entering unemployment was found when the age of caring was 22-25. Among those under age 23, only those who provided 20+ weekly hours of caring were at a higher risk of entering unemployment. Caring for a grandparent showed a similar risk as caring for a parent or other people with regard to unemployment.

Table 5. Cox regression results for the association between caring and unemployment stratified by two age groups (among young adults aged 16-29 when first interviewed and were not already in unemployment at baseline)^a

	Age last interviewed<23 (n=6686)			Age last interviewed>=23 (n=11236)		
	HR	95%CI		HR	95%CI	
Whether caring						
No care	ref			ref		
Yes	1.18	0.96	1.46	1.32	1.13	1.54
Age of caring (first observed)						
No care	ref			ref		
16/17	1.22	0.93	1.59	1.23	0.88	1.71
18/19	1.19	0.80	1.77	0.91	0.58	1.44
20/21	1.13	0.70	1.84	1.26	0.94	1.68
22/23	--	--	--	1.61	1.22	2.12
24/25	--	--	--	1.55	1.17	2.07
26/27	--	--	--	1.28	0.88	1.88
28/29	--	--	--	1.31	0.85	2.02
Duration of caring						
No care	ref			ref		
1	1.10	0.83	1.46	1.27	1.04	1.55
2	1.42	0.996	2.02	1.34	1.02	1.77
3	1.44	0.88	2.37	1.40	1.04	1.89
4 or more yr	0.85	0.49	1.49	1.37	1.05	1.79
Intensity of caring						
No care	ref			ref		
4 hours or less	0.97	0.72	1.31	1.18	0.96	1.43
5 - 9 hours	1.05	0.71	1.57	1.27	0.95	1.68
10 - 19 hours	1.49	0.97	2.22	1.46	1.03	2.08
20 - 34 hours	2.43	1.39	4.23	1.80	1.28	2.51
35 or more	1.86	1.03	3.34	1.85	1.31	2.63
Number of people caring for						
No care	ref			ref		
1	1.24	0.998	1.53	1.29	1.10	1.51
2 or more	0.79	0.41	1.53	1.78	1.19	2.66
Place of caring						
No care	ref			ref		
Inside household only	1.26	0.95	1.67	1.34	1.07	1.68
Outside household only	1.13	0.83	1.53	1.23	1.00	1.51
Inside and outside	1.12	0.68	1.85	1.60	1.24	2.07
Recipient						
Care grandparent						
No	ref			ref		
Yes	1.23	0.91	1.67	1.33	1.09	1.64
Care parent						
No	ref			ref		
Yes	1.19	0.89	1.60	1.33	1.09	1.61
Care anyone else						
No	ref			ref		

Yes 1.11 0.81 1.52 1.11 0.90 1.38

^aBased on multiply imputed data. All analyses were weighted and adjusted for sex, ethnicity, mother and father's occupational class, mother and father's education, household income, own highest education qualification, and birth year. Different care characteristics were not mutually adjusted but in separate regression models.

Employment exit

In terms of work exit among those who were working at baseline (Table 6), the results mirrored what had been found for the other two employment transition outcomes. The association between caring and work exit was only seen among those aged 23 or older, and a positive association between the risk of work exit and weekly hours of care was found. To visualise the associations from Cox regressions, Nelson–Aalen cumulative hazard curves for the association between care and employment transition outcomes were shown in Appendix Figure S1-S3.

Table 6. Cox regression for the association between caring and work exit stratified by two age groups (among young adults aged 16-29 when first interviewed and were in employment at baseline)^a

	Age last interviewed<23 (n=775)			Age last interviewed>=23 (n=6723)		
	HR	95%CI		HR	95%CI	
Whether caring						
No care	ref			ref		
Yes	1.03	0.61	1.72	1.27	1.05	1.55
Age of caring (first observed)						
No care	ref			ref		
16/17	0.996	0.58	1.70	--		
18/19	0.83	0.46	1.50	1.06	0.62	1.82
20/21	1.71	0.31	9.41	1.06	0.71	1.59
22/23	--	--	--	1.16	0.72	1.87
24/25	--	--	--	1.41	0.99	1.99
26/27	--	--	--	1.38	0.95	2.00
28/29	--	--	--	1.46	0.99	2.15
Duration of caring^b						
No care	ref			ref		
1	0.93	0.46	1.89	1.43	1.12	1.82
2 or more	1.23	0.77	1.98	1.13	0.87	1.46
Intensity of caring^b						
No care	ref			ref		
4 hours or less	0.99	0.58	1.67	1.13	0.88	1.45
5 or more	1.08	0.48	2.42	1.45	1.11	1.88
Number of people caring for						
No care	ref			ref		
1	1.02	0.61	1.70	1.24	1.01	1.52
2 or more	0.46	0.14	1.50	1.58	0.96	2.62
Place of caring						
No care	ref			ref		
Inside household only	1.24	0.51	3.05	1.10	0.63	1.92

Outside household only	0.83	0.45	1.52	0.90	0.51	1.62
Inside and outside	1.10	0.61	2.01	1.35	0.60	3.02
Recipient						
Care grandparent						
No	ref			ref		
Yes	0.97	0.60	1.56	1.13	0.85	1.51
Care parent						
No	ref			ref		
Yes	1.06	0.58	1.93	1.32	1.02	1.70
Care anyone else						
No	ref			ref		
Yes	0.98	0.25	3.90	1.28	0.98	1.68

^a Based on multiply imputed data. All analyses were weighted and adjusted for sex, ethnicity, mother and father's occupational class, mother and father's education, household income, own highest education qualification, and birth year. Different care characteristics were not mutually adjusted but in separate regression models. ^b Intensity and duration of care were combined due to small cell size (n<30) for the <23 age group.

Differences by gender and socioeconomic position

We then tested whether gender or socioeconomic factors modify the relationship between the different aspects of caregiving and employment transitions for the age \geq 23 group. We found that participants' education qualifications buffered the negative effect of intensive caring on employment transitions. Long weekly hours of caring influenced employment transitions among those without a degree but not for those with a degree (Table 7). Interestingly, we also found that father's degree qualification can buffer the negative effect of intensive caring on work exit. This association was independent of young adults' education (adjusted in the model). Sex was an effect modifier for the association with unemployment. For men, only those who provided a high number of weekly hours of care were more likely to be unemployed, but for women, any amount of care, even the lowest intensity level, was linked with an increased risk of unemployment.

Table 7. Stratified analysis by gender or socioeconomic effect modifiers (among age last interviewed \geq 23)

Enter employment (total n=5698)						
Intensity of caring	With a degree (n=2159)			Without a degree(n=3539)		
	HR	95%CI		HR	95%CI	
No care	ref			ref		
4 hours or less	1.13	0.93	1.36	0.98	0.84	1.14
5 - 9 hours	1.09	0.82	1.44	0.96	0.74	1.25
10 - 19 hours	1.02	0.54	1.94	0.69	0.51	0.94
20 hours or more	0.77	0.54	1.11	0.60	0.44	0.82

Enter unemployment (total n=11236)

Intensity of caring	With a degree (n=4467)			Without a degree (n=6769)			Men (n=4982)			Women (n=6254)		
	HR	95%CI		HR	95%CI		HR	95%CI		HR	95%CI	
No care	ref			ref			ref			ref		
4 hours or less	1.24	0.83	1.86	1.10	0.88	1.39	0.96	0.71	1.30	1.49	1.13	1.96
5 - 9 hours	1.15	0.59	2.25	1.23	0.86	1.77	1.09	0.68	1.75	1.58	1.08	2.32
10 - 19 hours	1.00	0.35	2.83	1.57	1.04	2.36	1.52	0.79	2.93	1.48	0.93	2.35
20 hours or more	1.22	0.50	2.97	1.94	1.46	2.59	1.72	1.11	2.67	1.92	1.38	2.67

Exit from work (total n=6723)

Intensity of caring	With a degree (n=2488)			Without a degree (n=4235)			Father with a degree (n=1128)			Father without a degree (n=5595)		
	HR	95%CI		HR	95%CI		HR	95%CI		HR	95%CI	
No care	ref			ref			ref			ref		
4 hours or less	0.87	0.46	1.67	1.26	0.92	1.73	0.99	0.55	1.79	1.33	1.09	1.63
5 - 9 hours	1.25	0.56	2.79	1.09	0.65	1.81	0.78 ^b	0.34	1.79	1.34	0.999	1.81
10 - 19 hours	1.10	0.34	3.55	1.60	0.93	2.76				1.46	1.06	2.02
20 hours or more	1.16	0.35	3.82	1.86	1.18	2.96				1.68	1.23	2.30

^a Based on multiply imputed data. All analyses were weighted and adjusted for sex, ethnicity, mother and father's occupational class, mother and father's education, household income, own highest education qualification, and birth year. ^b 5 or more hours of care categories were combined into one category due to the small number (n=14 for 10-19 hours, n=20 for 20+hours).

3.4 Changes in employment among carers

Among people aged 23 or over when taking care, the probability of being employed increased over time (Figure 1). However, at the year of uptake care (i.e., year 0, the first wave when report caring), this increase stopped, and young people reported the same percentage of being employed as one year before the uptake of care (year -1). From the second year of uptaking caring (year 1 to year 8), the probability of being employed increased again, but at a much slower speed than before the uptaking of caring. The pattern for the probability of being employed was not changed for those aged 22 or younger (Figure 2). The younger age of uptake care made Figure 2 have a shorter length of years before uptake (maximum five years before) than Figure 1 (maximum nine years before).

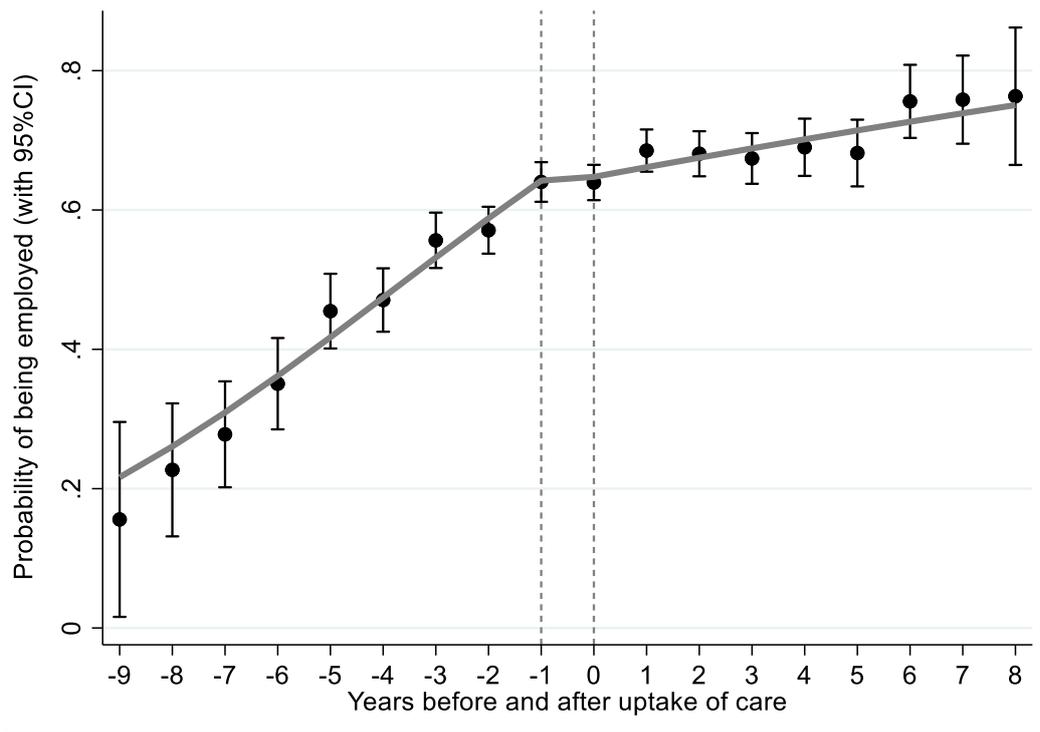


Figure 1. Predicted probability of being employed before and after uptake of care for the age ≥ 23 y group.^a

^a Black dots are the predicted probability of being employed each year (with 95% CI). Gray solid lines are the piecewise lines separated by the year when first reported care (year 0) and the 1 year before providing care (year -1). Gray dashed lines are the reference lines at year 0 and year -1.

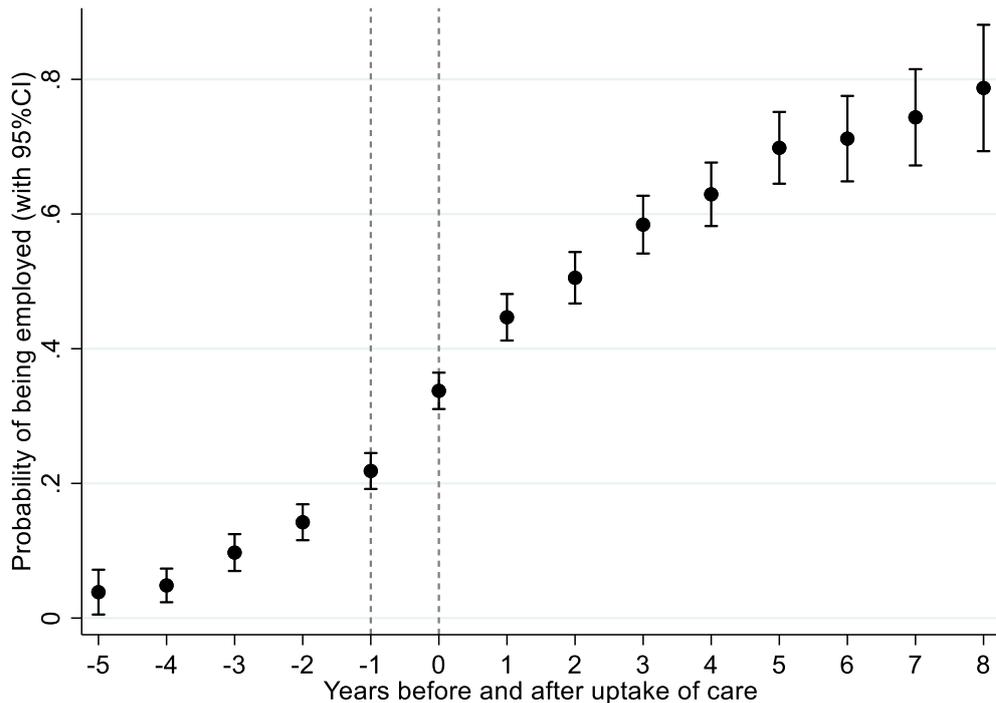


Figure 2. Predicted probability of being employed before and after uptake of care for the age<23y group.^a

^a Black dots are the predicted probability of being employed each year (with 95% CI). Gray dashed lines are the reference lines at year 0 and year -1.

3.5 Sensitivity analysis

Results from the 'quasi-cohort' analysis showed that carers were 33% less likely to have a degree qualification than non-carers (OR in fully adjusted model=0.67; 95% CI: 0.46, 0.98), which was consistent with the main analysis (OR in fully adjusted model =0.64).

4. Discussion

4.1 Summary

We examined the association between providing unpaid informal care and education and employment among young adults under age 30 in the UK. We found that those who provided care before age 30 were less likely to obtain a university degree, less likely to enter employment, and more likely to enter unemployment and exit from paid employment, compared to young adults who were not carers. Key among the findings was that the number of hours caring per week and the age of caring were crucial determinants of education and employment outcomes. At the same time, own educational attainment and parental educational attainment buffered the negative impact of providing care on employment.

4.2 Young adulthood care and education

The negative impact of young adulthood care on higher education found in our study is in line with previous qualitative and cross-sectional research that highlighted the difficulties for young adult carers in accessing and pursuing higher education. Considering the vital role of higher

education contributing to income and employment differentials across the life course (Carnevale et al., 2013; Crystal et al., 2017; McLaughlin & Jensen, 2000), young adulthood care may set young people into long term trajectories of socioeconomic disadvantage.

We contribute to the literature by further investigating how the impact on higher education is conditioned on the caring characteristics. We found that increased hours of care were associated with a reduced likelihood of obtaining a degree. No previous quantitative research has assessed the role of the intensity of caring on education. Still, our results support what has been raised in the qualitative literature that caring responsibilities often compete with the time for education (Day, 2015).

Our study also suggested that caring at age 18 or 19 may have a more significant impact on obtaining a university degree than caring at other ages. These are the ages when most young people in the UK make the transition into higher education. Providing caring at this age could set up extra challenges for young adults who are already busy with academic demands. Also, leaving home for university may be particularly difficult for some young adults if they are the primary carers at these ages.

4.3 Young adulthood care and employment

We found that providing care after age 22 negatively impacted employment outcomes, and the effects of caring were seen even after considering educational qualifications, suggesting that caring may have a direct impact on employment. Our results are partly in line with Brimblecombe et al. (2020), which found that young adults who provided care at baseline were less likely to be in employment one year later. But our analysis highlighted the age of caregiving as a key factor in the relationship between young adulthood care and employment, as we found no association between caring at full-time education ages (i.e., younger than age 22) and employment. We additionally assessed the impact on unemployment and work exit, which showed consistency with the employment outcome. We also found that the number of hours caring per week is a crucial determinant of employment. Our findings are consistent with the research focusing on mid-life or older age carers (Gomez-Leon et al., 2019; Harper, 2004), although some studies found no association between the intensity of care and older people's work exit (Carr, Murray, et al., 2018). Young adults are often more vulnerable than mid-life and older people in the labour market as they lack work experience and have not yet accumulated enough job skills and human capital (Reneflot & Evensen, 2014). Our results from several employment transition outcomes consistently suggest that providing care at a time when young adults have finished full-time education and are seeking to establish themselves in the job market can negatively influence their employment opportunities, and the effect is more substantial for those who provide intensive care.

We additionally conducted a piecewise model - a method that aims to reduce reverse causality by comparing the same people before and after the uptake of care. Results from the piecewise model reinforced our previous findings and, more importantly, showed that young adulthood care can influence employment both immediately and in the longer term. This is probably due to the scarring effect of early non-employment on future employment (Schmillen & Umkehrer, 2017). From a life-course perspective, young adulthood employment is a key mechanism for achieving life course socioeconomic advantage (Diprete & Eirich, 2006). Our study has the information of employment status up to 8 years after the uptake of care, and future study could explore whether the effect of young adulthood care could last into mid and later life.

4.4 Gender and socioeconomic differences

Studies from mid-life and older age carers have found that female carers were more likely than male carers to reduce work hours or leave the labour market (Ciccarelli & van Soest, 2018; Smith et al., 2020). We only found gender differences when assessing the association between intensity of caring and unemployment. We found no gender differences for any other characters of caring, including whether providing care, in relation to either education outcomes or employment outcomes. Overall, our findings suggested that gender may play a less critical role in shaping the effect of young adulthood care on education and employment compared with care in other life stages. We encourage future scholarship to examine gender inequality in providing care and labour force participation when the majority of this generation of young adults move into partnership and parenthood to understand different decisions made between men and women when facing care and employment conflicts.

Regarding socioeconomic differences, we found that having a university degree qualification can buffer the negative impact of young adulthood care on employment. Young people with higher education levels are often aided by sponsorship from educational institutions, summer internships, and a wider network of contacts when establishing them into employment (Lareau & Cox, 2011). They can translate their educational credentials into more stable and well-paid employment with a more favourable working environment and salaries (Blundell et al., 2005; Card, 1999), making them more able to combine work and care (Arksey & Glendinning, 2008).

There is ample theoretical and empirical literature on cumulative advantage processes in the life course (Hayward & Gorman, 2004; O'Rand, 2009). By young adulthood, the accumulation of skills and resources is sufficiently large to shape the course of young adult transitions, and young people from less advantaged social class are generally less well-positioned to make the transitions into adulthood than their peers from privileged families (Osgood et al., 2005). The role of education in the inter-generational transmission of adversity has been well-documented elsewhere (Crosnoe, Mistry, & Elder, 2002). However, our results show that social class may influence young people's employment through pathways other than education per se, as father's education buffered the impact of care on work exit even after adjusting for education. It is likely that the cumulation of financial, human, social, and cultural capital makes those young adults from more advantaged backgrounds more able to cope with the stress from care, to receive more support, and to buy in extra help when needed, and thus, remain a stronger attachment to the labour force. Also, the health and functioning of more advantaged parents may not be as bad even if they require care and may be more able to help if it is grandparents requiring care.

4.5 Strengths and limitations

We contribute to the young adult care literature by using a nationally representative household panel study in the UK, and we expand the understanding of young adulthood care by assessing the extent to which the effect of care is conditioned by the extent and context of care and whether the associations differ by gender and socioeconomic factors. However, our study has some limitations. Although we have covered several caring characteristics, such as the intensity and place of care and recipient, we could not consider whether this is a personal care or helping with chores, nor the reason why young adults are providing care (e.g., no access to formal care), nor the health condition of the recipient of care. In addition, our results rely on self-reported information, and there may be some biases when people report their caring responsibilities. Some young adult carers may start with care from teenage or childhood. We do not know the

caring history of young adults before they enter the survey, and thus, we cannot take this into account. What is more, young adults who provide the most intensive care maybe not be able to participate in the survey or perhaps more likely to leave the survey, so our results of young adulthood care may be biased. Finally, we measured the highest educational qualifications across waves, but it is possible that some people will have re-entered education after the period captured in the survey.

4.6 Conclusion

We found that the age of onset of being a young adult carer is key, as care influences when young adults make the transition into higher education, and influences employment when young adults exit full-time education and seek to establish themselves in the labour force. The implications of our results highlight the importance of supporting the needs of young adults providing informal care while making key life course transitions into higher education and employment. We found that those shouldering intensive caring responsibilities are most affected in terms of both education and employment. Our research thus has the potential to inform which young adult carers are particularly affected and need the most support. Young adulthood care may have both immediate and longer-term effects. Support is not only needed for those who are currently providing care, but also for those who have exited the caring role and seeking a return to the labour force or education. As a result of population ageing, more young adults with older parents or grandparents will require care. Awareness of the impact of young adulthood care and providing enough support to young carers is vital.

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