



Does providing informal care in young adulthood impact educational attainment and employment in the UK?

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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 socio-economic 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 the 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. Cox regression was used to analyse the association between caring and educational qualifications and employment transitions. We found that young adult carers were less likely to obtain a university degree and enter employment compared to young adults who did not provide care. In terms of care characteristics, weekly hours spent caring were negatively associated with the likelihood of obtaining a university degree qualification and being employed. Providing care after full-time education age negatively influenced employment entry, but having a university degree buffered the negative influence of providing care on entering employment. The influence on unemployment may be stronger for female carers than for male carers. Our results highlight the importance of supporting the needs of young adults who are providing informal care while making key life course transitions.

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, page 6) (2008) 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. However, different age ranges have been used for identifying a carer as a ‘young adult carer’, with some using ages 14–25 (e.g., Sempik & Becker, 2013, 2014; S Becker & Sempik, 2019), and some research has extended the ‘young adult carer’ definition to age 29 (Young et al., 2006; Fruhauf & Orel, 2008) or even up to age 40 (Dellmann-Jenkins et al., 2000). Here, we consider young adult carers (YAC) 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, 2020; ONS, 2021a).

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

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Gessa et al., 2022). In 2019, one in 10 carers in the UK were young adults aged between 16 and 30 (ONS, 2020). The responsibilities of YAC 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). 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). In addition, some studies have found that young women are more likely than young men to provide care, and YAC are more likely to live in socioeconomically disadvantaged circumstances than non-carers (Cass et al., 2009; Young et al., 2006), but it is still unclear how gender or socio-economic circumstances modify the influence of care in early adulthood. 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, and whether these associations differ by gender or socio-economic circumstances.

1.1. The role of young adult caring in education and employment transitions

Young adulthood is a key life course period for education and employment transitions. 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). 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). Employment is another key life course mechanism for achieving socio-economic 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; Luijckx & Wolbers, 2009), and lack of employment in young adulthood is likely to lead to "permanent scars rather than temporary blemishes" (Bell & Blanchflower, 2011:2).

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, YAC 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 their health conditions is potentially burdensome and exhausting for YAC, 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 YAC if they are primary carers or their family member 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 YAC and their non-carer peers. Non-carers typically have the freedom to pursue their work (Day, 2015), while for YAC, 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 YAC, 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 YAC due to the unpredictable nature of the care recipient's health conditions (Cass et al., 2009; Hamilton & Adamson, 2012).

1.2. 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 YAC, 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 YAC in the UK revealed that when compared with non-carers, YAC faced a number of barriers to attending higher education (Kettell, 2018). A similar qualitative study in Australia found that YAC 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 YAC (aged 14–25) 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 YAC 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 YAC, 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 YAC 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 aged 16–25 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 YAC's 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.

1.3. Gender and socio-economic circumstances differences

Furthermore, gender norms regard men as traditional breadwinners with less responsibility for unpaid family obligations than women (McMunn et al., 2020). Such gender norms may influence individual attitudes toward caring and the distribution of resources available for carers, and thus may lead to different consequences of caring by gender (Fisher & Tronto, 1990). 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. The potential gender differences in responding to care in early adulthood have not been investigated in longitudinal studies.

YAC come from all socio-economic 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 (Joseph et al., 2020). Several studies have found that YAC are more likely to live in socioeconomically disadvantaged households than non-carers (Di Gessa et al., 2022; Cass et al., 2009; Young et al., 2006) and young adults are also likely to have fewer material resources than working-age or older carers (Schneider, 2010). The extent and nature of the young adults' caring role can be shaped by the level of household resources. Good socio-economic circumstances may be beneficial for YAC when they pursue education and work while shouldering care responsibilities, but no quantitative research has assessed how socio-economic 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 YAC. Our study aimed to examine the relationship between providing care and educational qualifications and employment transitions among young adults aged 16–29 from a nationally representative household panel study in the UK and understand how the caring characteristics influence the above associations. To inform which YAC are particularly affected, we also tested whether these associations differ by gender or socio-economic 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 can be found in the User Guide (Institute for Social and Economic Research, 2022).

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 the age 16 at different times. Therefore, we pooled all age-eligible (age 16–29 at first interview) young adults across waves 1–10. 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 ($n = 27,209$). 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, participants were asked “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 derived a binary caring status variable (0 =no, 1 =yes) for each wave regardless of the place of caring activity. This yes/no care was used as time-varying in the analyses. As this paper focused on young adulthood caring, caring beyond the age range of 16–29 was not taken into account.

Also, 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 first 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 to 4 h to more than 100 h 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, partner, siblings, children, other relatives (such as uncles or aunts), and other non-relatives (such as friends or neighbours). We combined caring for 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

2.3.1. Educational attainment outcome

Educational attainment was measured by self-reported highest

educational qualification at each wave. 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 of whether having a university degree (yes/no) here and showed the results for obtaining other qualifications by care provision in Appendix.

2.3.2. Employment transition outcomes

Three employment transitions were considered: entry into paid employment, entry into unemployment, and exit from paid employment. At each wave, participants were asked which economic activity best describes their current employment situation. We considered 'in paid employment' as those who reported being in paid employment (full-time or part-time), self-employment or on maternity leave. 'Not in paid employment' included unemployed, retired, family care or homemaker, full-time student, long-term sick or disabled, and unpaid family business. 'Unemployment' was based on those who self-reported as 'unemployed'. 'Exit from paid employment' was defined as a change from 'in paid employment' to 'not in paid employment'. We studied 'unemployment' separately from 'not in paid employment' in order to capture those who exit employment to care full-time and so are not formally unemployed (i.e., seeking employment) (ONS, 2021b).

2.4. Measures of other covariates

Previous studies (e.g., Cass et al., 2009; Young et al., 2006) show that care provision and education or employment can be influenced by sociodemographic characteristics, so we control for age, sex, ethnicity, household income, parental education and occupational class for all models. All controls were measured at the baseline (i.e., the wave first interviewed). Ethnicity is grouped into White; Black; Indian; Pakistani; Bangladeshi; other Asian/other. We used quintiles of household income measured as 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 using the National Statistics Socio-economic Classification three-class version (managerial/professional, intermediate, and routine/manual). Parental education was measured as university degree or higher; further qualifications or certificates; some qualifications or certificates; no qualification. We also had a parent 'not in the household at age 14' category based on participants' self-reports. For the employment outcomes, we additionally adjusted for participants' own highest educational qualification (university degree/other higher education/ A-level/ GCSE/ other/ no qualification) and birth year (categorical variable) to account for period effects on employment.

2.5. Analytic methods

2.5.1. Educational attainment outcome

Cox proportional hazards regression models were used to analyse the association between caring and achieving a university degree, having established that the proportional hazards assumption was not violated (Cox, 1972). 'Event occurrence' was defined as first reporting having a university degree. Participants who did not have a university degree by the end of the follow-up (wave 10) or who left the study before having a university degree were treated as right-censored. The time scale in the Cox regression was the 'duration' between the baseline wave and the wave of event occurrence or right-censoring.

For sample selection, we excluded those who already had a university degree at baseline or before the onset of care, and those who only participated in one wave. 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 also excluded those younger than age 21

when last interviewed as they were too young to have finished a university degree. The total sample size of the analytic sample was 11,019 (Process of sample selection in Appendix Table S1). Other aspects of caring characteristics (six in total) were then tested in separate Cox regression models, with those who never provide care during young adulthood as the reference category.

2.5.2. Employment transition outcomes

For investigating the association between caring and employment transitions, again, Cox proportional hazards regression models were used. We modelled the three employment transitions in separate Cox regression models. Each transition was considered as an 'event occurrence'. Participants whose event of interest did not occur by the end of follow-up or who left the study before 'event occurrence' were treated as right-censored. The time scale in the Cox regression was the 'duration' between the wave of first entry into risk and the wave of event occurrence or right-censored. For employment entry, the time scale started at zero at the wave when the subjects were first 'not in paid employment'. For unemployment, the time scale started at zero at the wave when the subjects were first 'not in unemployment'. For exit from paid employment outcome, the time scale started at zero at the wave when the subjects were first 'in paid employment'.

We excluded those who only participated in one wave and those who were never 'at risk'. See the process of sample selection in Appendix Table S1. The total sample size of the analytic sample was 18,215 for the employment entry outcome, 18,861 for the unemployment outcome, and 13,350 for the exit from paid employment outcome. All models were stratified by two age groups: < 23 years or 23 + years 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.

2.5.3. Moderators

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

2.5.4. Weighting

All the analyses were weighted. UKHLS has a complex sample design and it is recommended to be used with weights to account for unequal selection probabilities, differential non-response, and potential sampling error (Institute for Social and Economic Research, 2021). Weights have been generated by the UKHLS team at each wave. We used the weights when individuals first enter the survey as sampling weights and included primary sampling units and strata to account for the clustering and stratification of samples.

2.6. 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 or wave 6 for new participants. 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). Independent variables, outcome variables, covariates, and weighting for study design were included in the MICE. 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). The 30 estimates were then 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 analytic young adult sample (n = 27,209). After that, we excluded imputed outcome values before running regression models (von Hippel, 2007).

2.7. Sensitivity analyses

2.7.1. Piecewise models for the employment outcome

Among carers, we additionally used piecewise logistic regression models to assess the probability of being employed before and after the uptake of care (Anderson, 2015; 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, and are also 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 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. Because the piecewise models were centred on the ‘uptake of care’, non-carers cannot be modelled as they do not have such ‘uptake of care’, which is a limitation of such models. Sex, ethnicity, household income, parental occupational class and education, birth year, number of waves participated, and age of uptake care were adjusted.

3. Results

3.1. Descriptive results

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 socio-economically disadvantaged household, including lower household income and lower parental educational qualification and occupational class. 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 than non-carers to live with their father when they were age 14 (18.6% vs. 13.5%), and were slightly more likely to be Pakistani or Bangladeshi.

In terms of caring characteristics (Table 2), 46% of YAC spent less than 5 h per week caring, and nearly 60% of YAC cared for only one wave. One in ten carers cared more than 35 h per week, and a fifth 20 h 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 someone else. Ninety per cent of YAC only cared for one person. 46% of caring happened outside the household only. The age when first observed caring was evenly distributed (12–15%) 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.

3.2. Educational attainment outcome

Results for the association between caring characteristics and having

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

	Non-carers (n = 22,730) ^b	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
University 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
University 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 using UK Household Longitudinal Study wave 1 (2009/11) to wave 10 (2018/19).

^b For descriptive purposes, non-carers are those who never provide care between age 16–29.

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

	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 h or less	45.7	48.1	44.4
5–9 h	19.2	20.7	18.3
10–19 h	15.6	15.8	15.5
20–34 h	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 using UK Household Longitudinal Study wave 1 (2009/11) to wave 10 (2018/19). Carers are those who ever provide care between age 16–29.

a university degree are shown in Table 3 (Results for covariates is in Appendix Table S3). Carers were 38% less likely to achieve a university degree qualification than non-carers in the follow-up (Hazard Ratio=0.62; 95% CI: 0.47, 0.82). The likelihood of obtaining a university 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 h per week were 47% less likely to have a university degree qualification, while those who cared for 35 h+ per week were 86% less likely to have a university degree qualification. Long care duration (4 years+) was associated with the lowest chance of achieving a degree, although there were overlapping confidence intervals between the groups of care duration. 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). Caring for grandparents was less associated with achieving a university degree than caring for parents or others. We observed weak support for an association between the number of care recipients and obtaining a university degree.

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

	Hazard Ratio (N = 11,019)	95%CI	
Whether caring			
No care	ref		
Yes	0.62	0.47	0.82
Age of care (first observed)			
No care	ref		
16/17	0.75	0.60	0.95
18/19	0.55	0.41	0.75
20/21	0.55	0.42	0.72
22/23	0.26	0.14	0.49
24/25	0.16	0.08	0.35
26/27	0.14	0.06	0.34
28/29	0.12	0.04	0.35
Duration of care			
No care	ref		
1	0.44	0.35	0.55
2	0.49	0.36	0.67
3	0.54	0.36	0.80
4 or more years	0.35	0.25	0.48
Weekly hours of care			
No care	ref		
4 h or less	0.53	0.44	0.64
5–9 h	0.40	0.29	0.56
10–19 h	0.38	0.25	0.58
20–34 h	0.27	0.16	0.47
35 or more	0.14	0.05	0.36
Number of people caring for			
No care	ref		
1	0.43	0.37	0.51
2	0.57	0.31	1.07
3 or more	0.49	0.22	1.10
Place of care			
No care	ref		
Inside household only	0.31	0.23	0.43
Outside household only	0.48	0.39	0.58
Inside and outside	0.54	0.40	0.74
Recipient of care			
Care grandparent			
No	ref		
Yes	0.62	0.51	0.76
Care parent			
No	ref		
Yes	0.47	0.36	0.61
Care anyone else			
No	ref		
Yes	0.48	0.37	0.61

^a Based on multiply imputed data using UK Household Longitudinal Study wave 1 (2009/11) to wave 10 (2018/19). All analyses were weighted and adjusted for sex, ethnicity, mother and father’s occupational class, mother and father’s education, household income, baseline age, and number of waves participated. Different care characteristics were not mutually adjusted but in separate regression models. The yes/no care variable was time-varying, while ‘no care’ for other aspects of caring were those who never provide care between age 16–29.

3.2.1. Differences by gender and socio-economic position

Neither gender nor socio-economic factors were moderators in the relationship between young adulthood caregiving and education (results are not shown in tables).

3.2.2. Sensitivity analysis

Results for obtaining A-level and other higher education qualifications are shown in Appendix Table S4. Carers were less likely to achieve other higher education qualifications than non-carers, but the association with A-level was weak.

3.3. Employment transition outcomes

3.3.1. 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 after age 23. Among the age 23 + group, the number of hours caring per week was a

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 = 7353)			Age last interviewed ≥ 23 (n = 10,862)		
	Hazard Ratio	95%CI		Hazard Ratio	95%CI	
Whether caring						
No care	ref			ref		
Yes	1.25	0.94	1.68	0.89	0.80	0.98
Age of caring (first observed)						
No care	ref			ref		
16/17	1.07	0.94	1.22	0.98	0.88	1.08
18/19	1.18	0.95	1.46	0.89	0.78	1.02
20/21	0.86	0.70	1.06	0.97	0.82	1.15
22/23	0.78	0.48	1.27	0.91	0.78	1.05
24/25	–	–	–	0.85	0.75	0.96
26/27	–	–	–	0.74	0.64	0.86
28/29	–	–	–	0.82	0.71	0.95
Duration of caring						
No care	ref			ref		
1	1.18	1.04	1.33	0.96	0.88	1.04
2	0.88	0.68	1.13	0.85	0.76	0.96
3	1.04	0.78	1.38	0.81	0.70	0.94
4 or more years	0.75	0.60	0.94	0.69	0.60	0.79
Intensity of caring						
No care	ref			ref		
4 h or less	1.11	0.96	1.28	0.94	0.88	1.02
5–9 h	0.97	0.80	1.17	0.86	0.77	0.97
10–19 h	1.21	0.98	1.50	0.80	0.69	0.94
20–34 h	0.78	0.49	1.25	0.80	0.65	1.00
35 or more	0.63	0.38	1.04	0.54	0.41	0.71
Number of people caring for						
No care	ref			ref		
1	1.06	0.95	1.19	0.86	0.81	0.92
2 or more ^b	0.91	0.67	1.24	0.91	0.71	1.15
Place of caring						
No care	ref			ref		
Inside household only	1.03	0.88	1.20	0.83	0.74	0.93
Outside household only	1.09	0.93	1.28	0.94	0.87	1.01
Inside and outside	0.91	0.72	1.16	0.66	0.58	0.76
Recipient						
Care grandparent						
No	ref			ref		
Yes	1.08	0.92	1.27	0.91	0.83	0.995
Care parent						
No	ref			ref		
Yes	0.94	0.80	1.11	0.82	0.75	0.89
Care anyone else						
No	ref			ref		
Yes	0.99	0.84	1.16	0.87	0.79	0.95

^a Based on multiply imputed data using UK Household Longitudinal Study wave 1 (2009/11) to wave 10 (2018/19). 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. The yes/no care variable was time-varying, while 'no care' for other aspects of caring were those who never provide care between age 16–29.

^b Caring for 3 + people was combined with the adjacent group due to small cell size (n < 30) in the age < 23 group.

crucial determinant of employment entry. Those caring for 35 h or more per week were 46% less likely to enter employment than non-carers. Longer care duration was negatively associated with entering employment, but there were overlapping confidence intervals between the groups of care duration. Caring inside the household or both inside and outside were more strongly associated with entering employment than caring outside the household. We found weak support for the associations with the number of people caring for and identity of care recipient.

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 = 7353)			Age last interviewed ≥ 23 (n = 11,508)		
	Hazard Ratio	95%CI		Hazard Ratio	95%CI	
Whether caring						
No care	ref			ref		
Yes	0.79	0.48	1.30	1.05	0.86	1.28
Age of caring (first observed)						
No care	ref			ref		
16/17	1.14	0.89	1.45	1.07	0.80	1.45
18/19	1.18	0.87	1.61	0.86	0.60	1.23
20/21	1.00	0.69	1.44	1.27	0.99	1.63
22/23	0.67	0.15	3.06	1.41	1.12	1.77
24/25	–	–	–	1.41	1.11	1.79
26/27	–	–	–	1.21	0.94	1.55
28/29	–	–	–	1.24	0.94	1.64
Duration of caring						
No care	ref			ref		
1	1.08	0.85	1.38	1.20	1.02	1.42
2	1.29	0.96	1.75	1.26	1.02	1.56
3	1.23	0.81	1.86	1.40	1.11	1.76
4 or more yr	0.79	0.48	1.28	1.14	0.91	1.44
Intensity of caring						
No care	ref			ref		
4 h or less	0.95	0.73	1.24	1.15	0.98	1.35
5–9 h	1.03	0.76	1.42	1.14	0.91	1.44
10–19 h	1.37	0.95	1.96	1.27	0.97	1.67
20–34 h	1.80	1.10	2.94	1.60	1.23	2.07
35 or more	1.58	1.00	2.48	1.42	1.08	1.87
Number of people caring for						
No care	ref			ref		
1	1.16	0.97	1.40	1.20	1.06	1.37
2 or more	0.75	0.42	1.35	1.51	1.07	2.12
Place of caring						
No care	ref			ref		
Inside household only	1.19	0.95	1.49	1.23	1.04	1.45
Outside household only	1.06	0.81	1.39	1.17	0.99	1.39
Inside and outside	1.04	0.69	1.59	1.40	1.14	1.72
Recipient						
Care grandparent						
No	ref			ref		
Yes	1.21	0.93	1.57	1.28	1.08	1.51
Care parent						
No	ref			ref		
Yes	1.05	0.83	1.34	1.19	1.02	1.38
Care anyone else						
No	ref			ref		
Yes	1.06	0.80	1.40	1.10	0.93	1.30

^a Based on multiply imputed data using UK Household Longitudinal Study wave 1 (2009/11) to wave 10 (2018/19). 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. The yes/no care variable was time-varying, while 'no care' for other aspects of caring were those who never provide care between age 16–29.

3.3.2. Unemployment

For entering unemployment (Table 5), we did not find significant differences between carers and non-carers. However, we still found that intensive care may influence unemployment, with those caring for 20 h+ per week 42–80% more likely to enter unemployment than non-carers. For the age 23 + group, longer care duration was positively associated with entering unemployment in general, but there were overlapping confidence intervals between the groups of care duration. Caring inside the household or both inside and outside may influence entering unemployment more than caring outside the household for the age 23 + group.

3.3.3. Employment exit

Providing care during young adulthood was not associated with exits from paid employment for any age group (Table 6). However, caring both inside and outside the household and caring for four years or more were associated with a higher risk of exits from paid employment among those younger than age 23. There was weak evidence suggesting any other caring characteristic influenced exits from paid employment.

3.3.4. Differences by gender and socio-economic position

We did not find any moderation by gender or socio-economic factors between yes/no care and any employment transition outcome. However, results suggest that gender and education could modify the relationship between caring hours/ caring duration and employment transitions (Stratum-specific associations are shown in Table 7). Participants' degree qualification buffered the negative influence of medium level (10–19 h) of caring intensity and medium length (2 years) of caring duration on entering employment, although did not buffer the influence of more intensive or longer duration of caring. Sex was a moderator for the association with unemployment. Caring for less than 10 h per week and caring for three years or more were associated with a higher risk of entering unemployment for women but not for men.

3.3.5. Sensitivity analysis

Piecewise models show that, among people aged 23 or over when taking care, the probability of being employed increased over time (Appendix Fig. S1). However, in the year of uptake care (i.e., year 0, the first wave when reporting 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 (Appendix Fig. S2).

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 and less likely to enter employment, compared to young adults who were not carers. Key among the findings was that the number of hours caring per week was a crucial determinant of education and employment outcomes. Providing care after full-time education age (i.e., age 23) negatively influenced young adults' likelihood of entering employment, but having a university degree buffered the negative influence of providing care on entering employment. The influence on unemployment may be stronger for female carers than for male carers.

4.2. Young adulthood care and education

The negative impact of young adulthood care on higher education

Table 6

Cox regression for the association between caring and exit from paid employment 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 = 3361)			Age last interviewed > =23 (n = 9989)		
	Hazard Ratio	95%CI		Hazard Ratio	95%CI	
Whether caring						
No care	ref			ref		
Yes	1.01	0.71	1.47	1.09	0.99	1.19
Age of caring (first observed)						
No care	ref			ref		
16/17	0.94	0.79	1.12	1.23	0.94	1.63
18/19	0.99	0.80	1.22	0.81	0.64	1.02
20/21	1.24	0.96	1.59	0.89	0.74	1.08
22/23	1.05	0.53	2.07	0.98	0.85	1.13
24/25	–	–	–	0.94	0.81	1.09
26/27	–	–	–	1.00	0.86	1.17
28/29	–	–	–	0.97	0.84	1.13
Duration of caring						
No care	ref			ref		
1	1.07	0.91	1.24	1.04	0.95	1.14
2	0.74	0.56	0.99	0.97	0.84	1.12
3	1.00	0.78	1.29	0.87	0.72	1.04
4 or more yr	1.56	1.00	2.43	0.80	0.68	0.94
Intensity of caring						
No care	ref			ref		
4 h or less	0.96	0.80	1.14	0.95	0.86	1.05
5–9 h	1.16	0.92	1.44	0.92	0.80	1.05
10–19 h	1.03	0.77	1.37	1.03	0.86	1.24
20 h or more ^b	0.88	0.65	1.18	1.02	0.90	1.17
Number of people caring for						
No care	ref			ref		
1	0.97	0.85	1.11	0.96	0.89	1.04
2 or more ^b	1.31	0.92	1.85	0.98	0.80	1.19
Place of caring						
No care	ref			ref		
Inside household only	0.88	0.74	1.05	0.94	0.84	1.06
Outside household only	1.03	0.85	1.25	0.99	0.91	1.09
Inside and outside	1.40	1.10	1.79	0.86	0.70	1.05
Recipient						
Care grandparent						
No	ref			ref		
Yes	1.04	0.87	1.25	0.99	0.89	1.11
Care parent						
No	ref			ref		
Yes	1.02	0.86	1.21	0.94	0.85	1.04
Care anyone else						
No	ref			ref		
Yes	0.99	0.81	1.23	0.98	0.88	1.09

^a Based on multiply imputed data using UK Household Longitudinal Study wave 1 (2009/11) to wave 10 (2018/19). 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. The yes/no care variable was time-varying, while 'no care' for other aspects of caring were those who never provide care between age 16–29.

^b Combined with the adjacent group due to small cell size (n < 30) in the age < 23 group.

found in our study is in line with previous qualitative and cross-sectional research that highlighted the difficulties for YAC 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 socio-economic disadvantage.

We contribute to the literature by further investigating how the impact on higher education is conditioned on the caring characteristics.

Table 7

Stratum-specific associations between caring and employment outcomes by with or without a degree (among age last interviewed ≥ 23).

Entering employment							Entering unemployment						
Intensity of caring	With a university degree (n = 4086)			Without a university degree (n = 6776)			Duration of caring	With a university degree (n = 4086)			Without a university degree (n = 6776)		
	Hazard Ratio	95%CI		Hazard Ratio	95%CI			Hazard Ratio	95%CI		Hazard Ratio	95%CI	
No care	ref			ref			No care	ref			ref		
4 h or less	1.01	0.89	1.14	0.92	0.83	1.02	1	0.99	0.86	1.15	0.95	0.84	1.07
5–9 h	0.80	0.64	1.01	0.88	0.74	1.04	2	1.03	0.83	1.28	0.78	0.67	0.91
10–19 h	0.94	0.68	1.31	0.74	0.61	0.91	3 or more years ^b	0.75	0.64	0.90	0.71	0.61	0.82
20 h or more	0.69	0.50	0.93	0.64	0.51	0.80							
Intensity of caring	Men (n = 5248)			Women (n = 6260)			Duration of caring	Men (n = 5248)			Women (n = 6260)		
	Hazard Ratio	95%CI		Hazard Ratio	95%CI			Hazard Ratio	95%CI		Hazard Ratio	95%CI	
No care	ref			ref			No care						
4 h or less	1.01	0.78	1.29	1.39	1.09	1.78	1	1.11	0.87	1.41	1.36	1.06	1.75
5–9 h	0.91	0.60	1.38	1.44	1.04	1.98	2	1.26	0.90	1.75	1.33	0.98	1.79
10–19 h	1.39	0.91	2.13	1.22	0.84	1.77	3 or more years ^b	0.93	0.69	1.25	1.54	1.22	1.95
20 h or more	1.41	0.99	2.01	1.59	1.22	2.07							

^aBased on multiply imputed data. All analyses were weighted and adjusted for covariates. ^b Combined with the adjacent group due to small cell size (n < 30) in stratified data.

We found that increased hours of care were associated with a reduced likelihood of obtaining a university 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).

4.3. Young adulthood care and employment

We found that providing care after full-time education age negatively influenced young adults' likelihood of entering employment, and the effects of caring were seen even after adjusting for 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 could be 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 23) and employment. 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 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 conducted a piecewise model as sensitivity analysis - 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 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 socio-economic 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.

We additionally assessed the influence on unemployment and exits

from paid employment. The results for unemployment were mainly consistent with the inverse of entering employment, with caring intensity being the key factor influencing unemployment, although the associations were generally weaker than entering employment. Fewer relationships between caring characteristics and exits from employment were found among young adults. The sample for assessing exit from paid employment are those who were working. It is possible that working YAC may choose to reduce their working hours or adapt their working patterns to balance their caring responsibility and work, but this was not assessed in our study. We encourage future studies to examine this.

4.4. Gender and socio-economic 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). In our study, 58% of YAC are women. In line with the mid-life and older age carers literature, we also found that caring for less than 10 h per week and caring for three years or more were associated with a higher risk of entering unemployment for young women but not for young men. Female carers who are in low-paid or less flexible jobs may choose to enter unemployment and thus have access to unemployment benefits and concentrate on their care responsibilities. However, unemployment during young adulthood for female carers may lead to longer-term scarring effects (Bell & Blanchflower, 2011:2) Interestingly, we found no gender differences for any other characteristics of caring, including whether providing care, in relation to either education outcomes or other employment outcomes (i.e., employment entry and employment exit). We encourage future scholars 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 socio-economic differences, we found that having a university degree qualification can buffer the negative influence of young adulthood care on employment entry. 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).

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 socio-economic 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. Our results rely on self-reported information, and there may be some biases when people report their caring responsibilities. In addition, we were not able to account for whether the influences of caring may be buffered by the level of support that young adults receive because such data was not collected. Future studies could assess the use and role of formal and informal support among young carers.

Some YAC may start providing care from their teens or in childhood. We do not know the caring history of young adults before they enter this survey, and thus, the age at which young adults start caring and the duration of caring may not be accurate. 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 on young adulthood care may be biased.

4.6. Conclusion

We found that care in young adulthood influences young adults' transition into higher education and the opportunities 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 achievement and employment transitions. The influence on unemployment may be stronger for female carers than for male carers. Our research has the potential to inform which YAC 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. Providing suitable formal care arrangements may prevent some young adults from adopting a caring role.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.alcr.2023.100549](https://doi.org/10.1016/j.alcr.2023.100549).

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