Young carers and inequalities in educational attainment and school engagement: Evidence from the UK household longitudinal study linked to the national pupil database

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ABSTRACT

Young carers (individuals under 18 providing care to family members) experience significant disadvantages. While prior research suggests caring negatively impacts education, evidence is limited by methodological constraints and lacks national-level representation. This study aimed to assess associations between young caring and official educational attainment and school engagement at primary and secondary school levels in England, and to identify potential inequalities by gender, ethnicity, socioeconomic factors, household composition, and special educational needs.

We used data from Understanding Society: UK Household Longitudinal Study linked with the National Pupil Database. We used cross-sectional pooled data covering 2009–2018, focusing on two educational stages in England: Key Stage 2 (KS2, end of primary school) and Key Stage 4 (KS4, end of secondary school). Regression models assessed associations between self-reported young caring and educational outcomes (attainment and absenteeism), adjusting for sociodemographic covariates.

Young carers made up 12.8% of the KS2 sample ($n = 1740$) and 10.6% of the KS4 sample ($n = 2091$). They had significantly lower attainment at KS2 (reading, mathematics, writing) and at KS4 (fewer and lower-grade GCSEs). Persistent absenteeism was substantially higher among young carers compared to non-carers (KS2: 5.8% vs 3.7%; KS4: 24.5% vs 19.1%). Socioeconomic disadvantage explained part, but not all, of the educational gaps. No additional inequalities were observed. These findings demonstrate that young carers face early and persistent educational disadvantages, with lower attainment and higher absence rates partially linked to socioeconomic inequality, highlighting the urgently need for target support to help young carers manage responsibilities and mitigate negative impacts on education.

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1. Introduction

Young carer are individuals under the age of 18 who assist or support a family member or friend due to a physical or mental illness, disability, frailty or addiction (Carers Trust, 2020). Most commonly they care for a parent, sibling or grandparent (Letelier et al., 2024). While caregiving intensity varies, most young carers provide under 10 h of care per week, though around 29 % of those aged 10–17 report 10 or more hours weekly (Lacey et al., 2024), with higher intensity more common among girls (Letelier et al., 2024). Care recipients most frequently experience physical disabilities (46 %) or mental illness (40 %), followed by cognitive impairments (26 %) and substance addiction (10 %) (Lewis et al., 2023). Estimating the true prevalence of young carers is a challenge. Many remain "hidden in plain sight" – due to concerns about social services involvement or a lack of awareness or acknowledgement of their caring role. Current prevalence estimates vary hugely across countries. For instance, in the United States (US) where the recognition of young carers is relatively recent, estimates suggest that over 5.4 million young people under 18 (approximately 7.5 %) are young carers (American Association of Caregiving Youth, 2023). In England and Wales, where young carers have been acknowledged for a longer period (Lewis et al., 2023), the 2021 Census reported 127,000 young carers under 18 (around 1.4 %). However, this figure, based on adult responses, underestimates prevalence. When young people are asked directly, the prevalence is more like 11.9 % (equivalent to approximately 940,000 young carers in the UK) (Letelier et al., 2024).

1.1. Young caring and educational attainment

Providing care at a young age has a profound effect on various aspects of life, including mental and physical health (Lacey et al., 2022; King et al., 2021; Fleitas Alfonzo et al., 2024), wellbeing (Lacey et al., 2025; Lloyd, 2013), education (Becker & Sempik, 2019) and social relationships (Alfonzo et al., 2023). Few quantitative studies have examined the association between young caring and educational attainment and engagement. Most of these studies have been conducted using data from the UK and Australia. Firstly, regarding educational attainment, an online cross-sectional survey of young carers in the UK conducted by Becker and Sempik (2019) found that 45 % of young carers felt that they would have had higher levels of educational attainment had they not had caring responsibilities. However, this study employed a convenience sample and only included young carers and therefore could not compare educational experiences to non-carers. It also only included subjective measures of attainment. In another study in England which did compare carers to non-carers and used examination results included in the Longitudinal Study of Young People in England (LSYPE) found that young carers had substantially lower attainment in school year 9 (age 13–14) than their peers (The Children's Society, 2013). However, this study did not account for potential confounding by socioeconomic and household circumstances (Letelier et al., 2024) which are known to differ between carers and their peers and influence educational attainment. A Northern Ireland study found that young carers were less likely to take the test at age 10–11 to transfer to a selective grammar school and those that did performed worse than their non-carer peers (Lloyd, 2013). However, this study had a poor response rate (~30 %) and only captured a specific option of educational progression and attainment.

A report produced by the young carer charity, MYTIME, using data from seven primary schools in Dorset linked to the National Pupil Database, found that young carers in primary school (ages 5–11) were significantly under-performing in reading, writing and maths compared to children without caring responsibilities (MYTIME Young Carers, 2024). For example, only 51 % of young carers were reaching their age-related expectations in reading. While this study provides an up-to-date reflection on the educational disadvantage experienced by young carers the study was regional in focus and only included schools where young carer programmes were already running and where the young carers included were known to the school. Further, the study did not adjust for confounders of the relationships between young caring and educational outcomes, such as household socioeconomic circumstances, and household composition.

1.2. Young caring and educational engagement

Regarding young caring and educational engagement (including attendance, absences and exclusions), an Australian study drawing on a nationally representative school-based survey of young people aged 8–14 found that young carers had lower school engagement than their non-carer peers (Hamilton & Redmond, 2020). This was particularly the case for young carers providing care to someone with a mental illness or substance misuse. This was further compounded if the young carer had Special Education Needs or Disability (SEND). In this study school engagement was captured via a modified version of the *Satisfaction with School* scale which included indicators of school enjoyment, feelings of safety at school, rather than objective indicators of engagement, such as attendance.

Carers Trust, a UK national carers charity, recently analysed attendance figures published by the Department for Education for the academic year 2023/24 (Carers Trust, 2024). This showed that young carers missed around 23 days of school every year compared to 13 days for non-carers. Further, 45 % of young carers in secondary school (age 11–18) were classified as "persistently absent" – defined as missing at least 10 % of school sessions compared to 25 % for non-carers. While these figures are up-to-date, they rely on the young carer being known and reported in the School Census dataset rather than being based on self-reported caring information from young people themselves. This was also a descriptive analysis which did not account for important confounding variables.

1.3. Additional inequalities in young caring and education associations

Previous work in the UK has demonstrated that young carers are over-represented in certain sectors of society. For instance, young

people from Pakistani and Bangladeshi backgrounds, from more deprived neighbourhoods, from households where parents are out of paid employment, and households in the lower part of income distribution are more likely to be young carers (Letelier et al., 2024). However, we know very little about whether there are additional inequalities for young carers by gender, ethnicity, socioeconomic position and SEND. It is likely that being from ethnically minoritised communities, from more disadvantaged backgrounds, being female, and having a SEND will present a "double disadvantage" for young carers and their educational experiences.

There is strong evidence that these characteristics are linked to persistent educational inequalities in the wider population. Gender, ethnicity, and parental socioeconomic position are key drivers of attainment gaps (Li, 2020; Early et al., 2020), while SEND status and Free School Meal (FSM) eligibility are established markers of disadvantage linked to lower attainment and attendance outcomes (Hobbs & Mutebi, 2021; Francis-Devine et al., 2025). Household structure, family income, and neighbourhood deprivation also reflect contexts of cumulative disadvantage. We therefore expected that caring-related barriers would be amplified among groups already facing these structural inequalities.

The MYTIME report discussed above found that socioeconomic disadvantage further exacerbated associations between young caring and educational attainment; 44 % of young carers were receiving Free School Meals (FSM) and 53 % were receiving Pupil Premium funding (this is additional funding to help improve educational outcomes for disadvantaged young people) (MYTIME Young Carers, 2024). Although this report described socioeconomic differences, formal modification between young caring and these factors was not tested.

Prior research has shown some evidence of additional inequalities by ethnicity and household income for wellbeing outcomes (Lacey et al., 2025), but this has not yet been tested in relation to educational outcomes.

1.4. The present study

Given the current gaps in available evidence on young caring and education, our aim was to test associations between self-reported young caring status and officially captured educational attainment and engagement (absences) at primary and secondary school at the national level – the first study to do so. Second, we aimed to explore whether there were additional inequalities by gender, ethnicity, socioeconomic circumstances (at household and area level), household composition, and SEND to identify whether there are particular groups of young carers who are more disadvantaged and may require additional support.

By analysing national-level data and testing intersectional inequalities, we illustrate how educational disadvantage is not solely a product of individual or household characteristics but emerges through multi-level dynamics (Bronfenbrenner, 1979). Positioning young caring within this broader ecology of inequality highlights how caring responsibilities intersect with structural determinants, such as socioeconomic status and ethnicity, to shape educational trajectories. This framing offers insights that extend beyond the UK context to global debates on inclusion and equity, showing how marginalised roles, such as caring, are embedded within wider social contexts.

2. Methods

This study utilised data from Understanding Society: The UK Household Longitudinal Study (UKHLS), a nationally representative household panel survey in the UK, which was linked to the *National Pupil Database (NPD)*. UKHLS follows individuals longitudinally, collecting self-reported data from children (ages 10–15) and adults (16+) (University of Essex, Institute for Social & Economic Research, 2023). The NPD is an administrative dataset maintained by the UK Department for Education, containing educational attainment and engagement data for all pupils attending English state-funded schools. Only individuals who consented to data linkage were included in the analysis (Department for Education, University of Essex, Institute for Social & Economic Research, 2022). Consent to link education records was obtained at UKHLS waves 1 and 4. At wave 1, of those eligible, 6480 children (66.5 %) and 3915 adults (77.7 %) consented; at wave 4, 4739 children (62.2 %) and 5260 adults (78.9 %) consented (Department for Education & Institute for Social and Economic Research, 2020).

We used cross-sectional pooled data spanning nine UKHLS waves (2009–2018), depending on NPD availability. We focused on two educational stages in England when pupils take national assessments: Key Stage 2 (KS2), the final year of primary school (age 11), and Key Stage 4 (KS4), the final year of secondary school (age 16).

For KS2, data came from waves 3, 5, 7, and 9 (2011–2018), covering pupils aged 10–11 at Year 6. Caring status was based on responses from the UKHLS youth questionnaire. For KS4, NPD-linked data was only available until 2013, so we used waves 1 to 5 (2009–2013), covering pupils aged 15–16 at Year 11. Caring status in this group came from either the youth or adult questionnaire.

Due to limited representation, pupils attending private schools, referral units, or special schools were excluded from the analysis (KS2 $n = 13$; KS4 $n = 117$).

2.1. Young caring

Self-reported young carer status was derived from UKHLS questions regarding caring responsibilities within the household. Young people aged 10–15 were asked *"Some people your age may have to look after other people. This could be a brother or sister, a relative or someone else who is disabled or sick. Is there anyone like this who lives here with you that you have to look after on a regular basis?"* Due to concerns about potentially including babysitting for a younger sibling, young people who reported caring solely for a child were only classified as carers if an adult in the household also reported a caring role for that child. For individuals aged 16+, caring status was assessed 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 or friend etc.)?" In UKHLS, the question on caring was included in the adult questionnaire from wave 1 and has been asked in every wave since. In the youth questionnaire, the caring question was introduced in wave 3 and has been asked every two years. Young people who answered yes to either question were considered as young carers.

Young carers also reported hours of care they provided per week. Based on prior research (Letelier et al., 2024), this was categorised into two groups: *<10 h* and *10 or more hours* per week. Additionally, carers were asked whom they provided care for, which was classified into two groups: *parent* vs *other*.

2.2. Educational attainment

KS2 attainment was assessed across three core subjects: English reading, mathematics, and English writing obtained at the end of primary school. Due to changes in assessment methods over time, performance was classified consistently using a binary measure: *performing at or above the expected standard* versus *performing below the expected standard.* Before 2015, KS2 attainment was reported using National Curriculum (NC) levels (from level 1 to 6), with level 4 representing the expected standard. In 2016, the assessment system transitioned to scaled scores ranging from 80 to 120, with 100 indicating expected standard. Attainment in reading and mathematics was determined by pooling NC levels with the binary categorisation of scaled scores. Writing performance in 2011 was based on NC test levels; from 2012 to 2015, on teacher-assessed NC levels; and from 2016, on teacher assessment outcomes.

For KS4, attainment was assessed using General Certificate of Secondary Education (GCSE) results and equivalent qualifications obtained at the end of secondary school. Outcomes include the total number of GCSEs achieved at any grade (A*-G), at level 1 (grades D-G), at level 2 (grades A*-C), and at top grades (A*/A), analysed as count and binary variables (A*t least one GCSE* vs. *none*). Additional key benchmarks included achieving five or more GCSEs or equivalent including English and Maths at level 1 or level 2 (binary: *yes/no*) and achieving the English Baccalaureate (EBacc). The EBacc is a performance measure that recognises students who achieve a Grade C in a defined set of academic subjects. We analysed EBacc in English, mathematics, and both combined (binary: *yes/no*). Finally, the average capped point score was used, a continuous variable reflecting the total points from a pupil's top eight GCSEs or equivalent (Worth, 2014).

2.3. Educational engagement

For KS2 and KS4 educational engagement, the NPD provides annual count of absence sessions (up to 2017), analysed as count variables representing the total number of absent days (total, authorised and un-authorised). Two indicators of persistent absenteeism were derived using thresholds of ≥ 7 % and ≥ 10 % of sessions missed (binary: *yes/no*). The 10 % threshold follows the Department for Education's definition of "persistent absenteeism". The 7 % threshold of was based on discussion with teachers, who identified it as the level at which attendance became a concern. Exclusions were not analysed due to case numbers.

2.4. Covariates

Covariates included: gender, ethnicity (*White, Black, Indian/Pakistani/Bangladeshi, Other*), SEND, Free School Meal eligibility (FSM), school type (*community school/Shared control or autonomously operated*), household parental composition (*single-parent/two-parent*), household income (*OECD equivalised quintiles*), parental occupational class (*NS-SEC: managerial or professional/intermediate/ routine/not in paid work*), and area deprivation (*Index of Multiple Deprivation, quintiles*).

2.5. Statistical analysis

We conducted a descriptive analysis to examine the distribution of young carers and non-carers across covariates. Contingency tables were generated, and logistic regression models were used to assess associations between caring status and each covariate.

To explore the association between caring status and educational outcomes, regression models were employed: logistic regression for binary outcomes (KS2: performance core subjects; KS4: achieving 1+ GCSE at certain grades; achieving 5+ GCSEs; achieving EBacc; KS2-KS4: persistent absenteeism), Poisson regression for count variables (KS4: number of GCSEs; KS2-KS4: number absent days), and linear regression for continuous outcomes (KS4 point score). To account for variations in assessment methods over time, all models were adjusted for calendar year. Then, further adjustments for potential confounding include parental composition, and socioeconomic factors (household income, parental occupation, area deprivation, and FSM) school type, and SEND. Complete case analysis was used for consistency across models.

Effect modification was assessed through interaction terms between caring status and all covariates, with stratified analyses where interactions were significant. Additional analyses explored variation by care intensity and care recipient. Given high missingness in these variables, multiple imputation using chained equations (20 imputations) was performed among young carers, incorporating all main and auxiliary variables (urbanicity and number of siblings) to minimise bias.

We followed *Understanding Society* guidelines to create inverse-probability non-linkage weights (Understanding Society, n.d.). Linkage probabilities were modelled via logistic regression using demographic, household, and geographic predictors, retaining significant variables to reduce collinearity. The inverse probabilities were multiplied by the enumeration weight to form tailored weights. Weight dispersion and Kish's design effect (≈ 1.25 Wave 4; ≈ 2.36 Wave 1) indicated modest variance inflation; trimming was therefore not applied to avoid bias (Potter, 2015).

All analyses were performed using STATA statistical software, version 18 (StataCorp, 2023).

3. Results

The initial NPD-KS2 dataset included 10,824 pupils. Analyses focused on 10–11-year-olds from 2011 to 2018 who answered the UKHLS caring question (Fig. 1), yielding a final sample of 1740 pupils. Missing values (<2.5 %) were observed for caring status, household income, occupational class, and performance in reading, maths, and writing. Due to safeguarding measures, exact Ns are not reported.

For KS4, the initial dataset included 7245 pupils. Analysis covered 2009–2013 and included those aged 15–16 who responded to the caring question (Fig. 2), resulting in a final sample of 2091 pupils. Variables with <2.5 % missingness included caring status, parental composition, household income, and occupational class. SEND and Free School Meal eligibility had 9.7 % missingness ($n =$ 229). Educational outcomes had no missing data, though not all were measured throughout. GCSE-related metrics were recorded from 2009 ($N = 2091$); EBacc from 2010 ($N = 1695$), and capped point score from 2011 ($N = 1279$).

3.1. Descriptive results

Table 1 presents descriptive characteristics of the KS2 and KS4 samples by caring status. Young carers comprised 12.8 % of the KS2 sample and exhibited notable socioeconomic disadvantages. They were more likely to reside in single-parent households (29.9 % vs. 18.3 %, $p = 0.007$), have unemployed parents (17.7 % vs. 11.6 %, $p = 0.066$), live in more deprived areas (24.5 % vs. 17.4 %, $p =$ 0.044), attend community schools (62.4 % vs. 51.7 %, $p = 0.023$) and qualify for FSM (20 % vs. 10 %, $p = 0.001$). No significant associations were found by gender, ethnicity, household income, or SEND.

Similar patterns emerged at KS4. Young carers were more likely to be from Indian/Pakistani/Bangladeshi backgrounds (10.0 % vs. 4.4 %) live in lower income households (26.5 % vs. 15.0 %), have unemployed parents (41.8 % vs. 12.7 %), live in more deprived areas (34.6 % vs. 20.7 %,); and showed higher rates of SEND (30.6 % vs. 18.9 %) and FSM (48.3 % vs. 22.2 %).

Educational disparities were evident at both key stages. At KS2, young carers were overrepresented among pupils performing below expected standard in core subjects (28.6 % vs. 22.3 %), including reading (13.9 % vs. 11 %), maths (15.6 % vs. 11.4 %), and writing (19.8 % vs. 12.4 %). At KS4, the mean number of GCSEs achieved by young carers was 6.8 (SE 0.13), compared to 7.8 (SE 0.09) for non-carers, and a lower proportion of young carers attained top GCSE grades (A* or A: 24.1 % vs. 44.5 %) or A*-C (76.7 % vs. 88.3 %), while they were overrepresented in lower grades (D-G: 80.3 % vs. 59.9 %).

Regarding benchmark outcomes, 51.4 % of young carers did not achieve 5+ GCSEs at Level 2 (A*-C), compared to 35.8 % of non-carers. Similarly, 50.3 % did not achieve the EBacc in English and Maths, compared to 32.9 % of non-carers. The mean capped point score was also lower among young carers, with non-carers averaging 440.3 (SE 3.4), and young carers at 402.3 (SE 10.4).

3.2. Educational attainment

At KS2 (Table 2) young carers were significantly less likely to achieve the expected standard in reading, mathematics, and writing (Model 1). Adjusting for academic year, young carers were 35 % less to meet the expected level across all three subjects (OR: 0.65, 95 % CI=0.44–0.96). Individually, they were 43 % less likely to meet the standard in reading (OR: 0.57, 95 %CI=0.35–0.93)), 40 % in
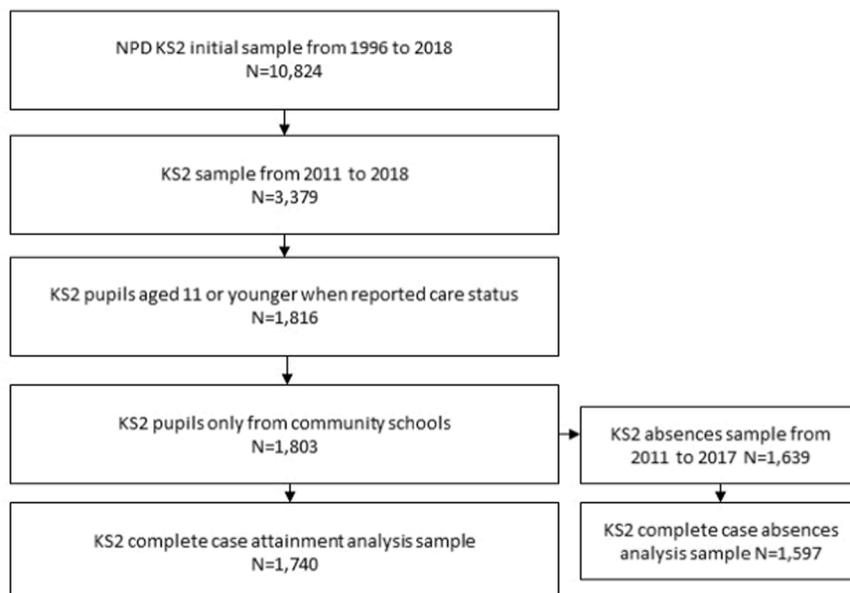
Fig. 1. Flow diagram of the KS2 analysis sample.
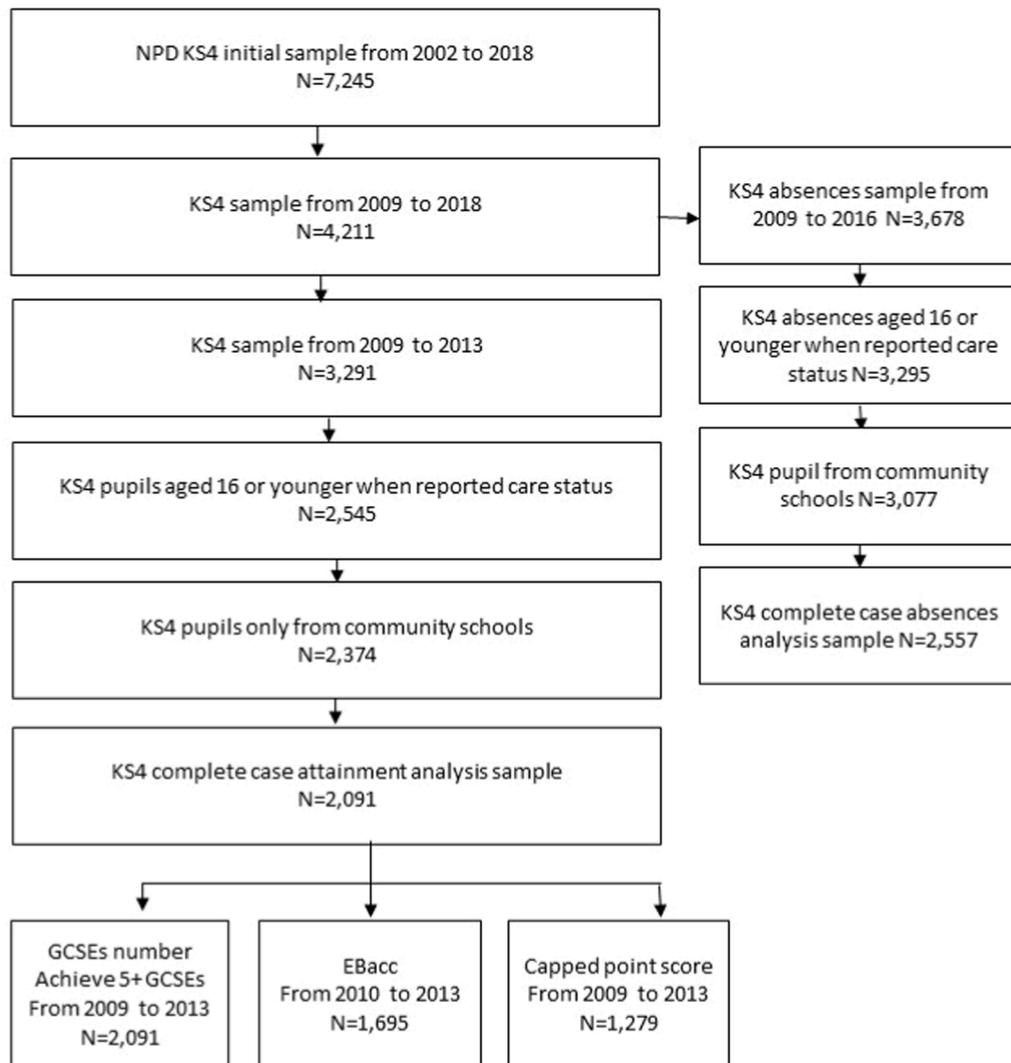
Fig. 2. Flow diagram of the KS4 analysis sample.

mathematics (OR: 0.60, 95 %CI=0.34–1.01), and 44 % in writing (OR: 0.56, 95 %CI=0.35–0.90). After adjusting for SEP and soci-odemographic factors (Model 2), associations for performance in all three subjects combined, reading, and mathematics became non-significant, while writing performance remained borderline significant (OR: 0.63, 95 %CI: 0.39–1.02).

At KS4 (Table 3), young carers obtained fewer and lower-grades GCSEs than non-carers. On average, young carers obtained 13 % fewer GCSEs (IRR: 0.87, 95 %CI=0.81–0.93), 60 % fewer GCSEs at grades A-A* (IRR: 0.40, 95 %CI=0.28–0.57), and 32 % fewer GCSEs at grades A*-C (IRR: 0.68, 95 %CI=0.59–0.78). They were also 61 % less likely to achieve at least one GCSE at grades A-A* (OR: 0.39; 95 %CI=0.26, 0.56), 57 % less likely at grades A*-C (OR: 0.43, 95 %CI=0.27–0.68), and more than twice as likely to receive only lower-grade (D-G) (OR: 2.80, 95 %CI=1.78–4.41).

These disparities persisted after adjusting for sociodemographic and socioeconomic factors, though effect sizes were reduced. Young carers still obtained 40 % fewer GCSEs at grades A-A* (IRR: 0.60, 95 %CI=0.42–0.84), 16 % fewer at A*-C (IRR: 0.84, 95 % CI=0,74–0.96), and 28 % more at D-G (IRR: 1.28, 95 %CI=1.10–1.51).

Further analyses on key educational benchmarks (Table 3), showed that young carers were 52 % less likely than non-carers to achieve 5+ GCSEs or equivalent at grade level 1 (A*-C) (OR: 0.48, 95 %CI=0.33–0.70), though this association became non-significant after full adjustment. Similar trends were observed in EBacc outcomes, young carers were significantly less likely to achieve the full EBacc qualification (OR: 0.46, 95 %CI=0.31–0.70) and were particularly disadvantaged in achieving the EBacc English component (OR: 0.36, 95 %CI=0.24–0.55). This association remained significant after full adjustment, though weakened (OR: 0.56, 95 % CI=0.33–0.93).

Finally, young carers had significantly lower capped point scores, on average 38.3 points lower than non-carers (95 %CI=−54.6, −22.0). This association became non-significant after full adjustment (coefficient: −13.9, 95 %CI=−29.9, 2.14).

Table 1

Descriptive demographics, socioeconomic characteristics and educational attainment by caring status and KS level (%).

Carer status	Key Stage 2				Key Stage 4			
	All		Non-Carers	Carers	All		Non-Carers	Carers
	%	*p-value	%	%	%	*p-value	%	%
Non-Carer	87.2				89.4			
Carer	12.8				10.6			
Gender								
Men	49.5		49.6	48.7	48.5		48.6	47.6
Women	50.5	0.578	50.4	51.3	51.5	0.827	51.4	52.4
Ethnicity								
White	89.3		89.4	88.6	87.2		88.0	81.1
Black	3.0	0.557	2.9	4.0	4.2	0.877	4.3	3.7
Pakistani/Bangladeshi/Indian	4.3	0.934	4.4	3.6	5.1	0.003	4.4	10.0
Other	3.4	0.768	3.3	3.8	3.5	0.189	3.3	5.2
Parental composition								
Two parent household	80.2		81.7	70.2	73.8		73.7	75.3
Single parent household	19.8	0.007	18.3	29.9	26.2	0.727	26.3	24.7
Household income								
Highest quintile	21.0		20.9	21.9	18.3		19.3	9.7
Second quintile	20.8	0.728	20.8	21.2	21.4	0.433	22.1	15.3
Third quintile	21.6	0.438	22.0	18.7	21.7	0.061	21.7	21.7
Fourth quintile	20.7	0.910	20.9	19.2	22.4	0.008	21.9	26.9
Lowest quintile	15.9	0.540	15.5	19.0	16.2	0.001	15.0	26.5
Occupational class								
Managerial	50.3		50.7	47.1	40.6		42.7	22.8
Intermediate	19.3	0.308	18.9	22.0	19.8	0.288	20.4	14.6
Routine	18.1	0.694	18.8	13.2	23.9	0.100	24.3	20.8
Not in paid work	12.3	0.066	11.6	17.7	15.7	<0.001	12.7	41.8
IMD								
Least deprived	24.4		25.1	19.3	17.7		18.4	11.6
Second quintile	19.0	0.668	18.9	19.6	21.6	0.753	22.6	12.7
Third quintile	19.8	0.303	20.0	18.8	19.1	0.282	19.2	18.4
Fourth quintile	18.5	0.350	18.6	17.8	19.6	0.090	19.2	22.7
Most deprived	18.3	0.044	17.4	24.5	22.1	0.008	20.7	34.6
SEND								
Not reported	88.1		88.1	88.0	79.9		81.1	69.4
Reported	11.9	0.279	11.9	12.0	20.2	0.002	18.9	30.6
Type of school								
Community school	53.1		51.7	62.4	44.4		44.1	47.3
Shared control/autonom	46.9	0.023	48.3	37.6	55.6	0.520	55.9	52.7
FSM eligible								
Not reported	88.8		90.0	80.0	75.1		77.8	51.7
Reported	11.2	0.001	10.0	20.0	24.9	<0.001	22.2	48.3
KS2 Educational Outcomes (%)								
Performance all three subjects: English reading, mathematics and English writing								
Below expected standard	21.8		22.3	28.6				
Above expected standard	78.2		77.7	71.4				
Performance Reading								
Below expected standard	11.4		11.0	13.9				
Above expected standard	88.6		89.0	86.1				
Performance Maths								
Below expected standard	12.1		11.4	15.6				
Above expected standard	87.9		88.6	84.4				
Performance Writing								
Below expected standard	13.6		12.4	19.8				
Above expected standard	86.4		87.6	80.2				
KS4 Educational Outcomes(%)								
Number GCSE								
GCSE with grade A*-A								
None					57.7		55.6	75.9
1 or more					42.3		44.5	24.1
GCSE with grade A*-C								
None					12.9		11.7	23.3
1 or more					87.1		88.3	76.7
GCSE with grade D-G								
None					38.0		40.1	19.7
1 or more					62.0		59.9	80.3
Number GCSE - Mean (SE)								
GCSE with grade A*-A					1.86 (0.1)		1.98 (0.1)	0.81 (0.1)

Table 1 (*continued*)

Carer status	Key Stage 2				Key Stage 4			
	All		Non-Carers	Carers	All		Non-Carers	Carers
	%	*p-value	%	%	%	*p-value	%	%
GCSE with grade A*-C					5.77 (0.1)		5.97 (0.1)	4.10 (0.2)
GCSE with grade A*-G					7.69 (0.1)		7.79 (0.1)	6.80 (0.1)
GCSE with grade D-G					1.92 (0.1)		1.82 (0.1)	2.70 (0.2)
Achieved 5 or + GCSE or equivalent at grades								
At Grade level 1: A*-G								
No					3.8		3.6	5.7
Yes					96.2		96.5	94.3
At Grade level 2: A*-C								
No					37.4		35.8	51.4
Yes					62.6		64.2	48.6
Achieved EBacc**								
EBacc Eng & Maths								
No					34.9		32.9	50.3
Yes					65.1		67.1	49.7
EBacc English								
No					25.8		23.4	44.8
Yes					74.2		76.6	55.3
EBacc Maths								
No					27.6		26.3	37.1
Yes					72.5		73.7	62.9
Capped Point score Best 8*								
Mean (SE)					435.7 (3.4)		440.4(3.4)	402.5 (10.4)

Weighted percentages of complete data.

Un-weighted distributions presented in Table A1 in Appendix A.

KS2-Pooled data from 2011 to 2018.

KS4- Pooled data from 2009 to 2013

*P-value from weighted crude logistic regression model testing the association between caring status and each covariate.

** EBacc was measured from 2010 to 2013 (N=1,695).

***Capped point score was measured from 2011 to 2013 (N=1,279).

Abbreviations: SEND: Special Educational Needs and Disability, IMD: Index Multiple deprivation, SE: Standard Error, EBacc: English Baccalaureate, GCSE: General Certificate of Secondary Education, SE: Standard Error.

Type of school: community school and Shared control or autonomously operated school.

We examined potential effect modification by all covariates (Appendix B, Table B1). At KS2, associations between caring status and attainment varied by occupational class (reading $p = 0.006$; writing $p = 0.030$). At KS4, differences emerged by SEND (Number GCSEs: A*-A $p = 0.044$; A*-C $p = 0.035$; D-G $p = 0.003$) and by parental composition (5+ GCSEs A*-C $p = 0.035$). No effect modification was observed for other covariates.

Stratified analyses (Appendix B, Table B2) showed that at KS2 educational gaps were only present among young carers with parents in managerial roles, these carers were significantly less likely to meet expected standards in reading (OR: 0.42, 95 %CI=0.20–0.88) and writing (OR: 0.31; 95 %CI=0.15–0.62). At KS4, significant differences by caring status were observed only among pupils without SEND and those in two-parent households (Appendix B, Table B3). In these groups, young carers had poorer GCSE outcomes, whereas no differences were found among those with SEND or in single-parent households.

3.2.1. Young carers' characteristics

We examined young carers characteristics (Table 4). At KS2, 52.8 % reported providing care for a parent and 60.4 % at KS4. Care intensity was excluded from KS2 analysis due to the low number of carers providing ≥10 h per week. Exact Ns are withheld for safeguarding reasons.

At KS2, no significant differences were found by care recipient (Appendix C, Table C1). Young carers providing care for a parent were 69 % less likely to meet the reading standard compared to those caring for someone else (including grandparents, siblings and other), though this difference was not statistically significant (OR: 0.31, 95 %CI=0.03–3.75).

At KS4, no significant differences were observed by care recipient or care intensity (Appendix C, Table C2).

3.3. Absences

Absence data was available up to 2017 (Fig. 1 and 2). The analytical samples included 1597 pupils at KS2 (Fig. 1) and 2557 at KS4 (Fig. 2). Descriptive of the sample's demographics, socioeconomic characteristics are presented in Appendix D and show similar distribution to the attainment samples.

At KS2, from 2011 to 2017, on average, young carers had more absent days than non-carers: 7.5 (SE 0.3) vs. 6.1 (SE 0.4) (Table 5), including authorised (3.9 vs. 2.8 days) and unauthorised absences (0.9 vs. 0.3 days). At the 10 % persistent absenteeism threshold, 5.8 % of young carers were persistently absent vs. 3.7 % of non-carers. At 7 %, the figures were 13.5 % versus 8.5 %, respectively.

Table 2
KS2 - Association between educational attainment and caring status (N=1,740).

	Model 1				Model 2			
	Adjusted by academic year				Adjusted by sociodemographic and SEP			
	OR	(95% CI)		p-value	OR	(95% CI)		p-value
Performance all three subjects								
Non-Carer	Ref				Ref			
Carer	0.65	(0.44	0.96)	0.032	0.72	(0.48	1.09)	0.121
Performance Reading								
Non-Carer	Ref				Ref			
Carer	0.57	(0.35	0.93)	0.027	0.69	(0.42	1.13)	0.142
Performance Maths								
Non-Carer	Ref				Ref			
Carer	0.60	(0.34	1.01)	0.052	0.65	(0.37	1.13)	0.131
Performance Writing								
Non-Carer	Ref				Ref			
Carer	0.56	(0.35	0.90)	0.017	0.63	(0.39	1.02)	0.060

Weighted values of complete case data

KS2 - Pooled data 2011-2018

Model 1: Testing association between education outcomes and caring status adjusted by Key Stage 2 academic year.

Model 2: Testing association between education outcomes and caring status adjusted by Key Stage 2 academic year, parental composition, household occupational class, area deprivation, free school meal eligibility and school type.

Performance English Reading: Pooled data from National Curriculum level reported between 2011-2015 and from Scaled reading score reported between 2016-2018.

Performance Math: pooled data from National Curriculum level reported between 2011-2015 and from Scaled math score reported between 2016-2018.

Performance English Writing: Pooled data from National Curriculum level reported between 2011 and from National Curriculum Teacher Assessment reported between 2012-2015 and writing score Teacher Assessment reported between 2016-2018.

Performance all: performed at or above the expected level at the three core subjects: English reading, mathematic and English writing.

Similarly, at KS4, from 2009 to 2016, young carers missed an average of 13.5 days, compared to 10.4 days for non-carers. Persistent absenteeism affected 24.5 % of carers vs. 19.1 % of non-carers.

Table 6 shows that young carers had significantly higher absenteeism than non-carers. At KS2, they had 29 % more total absences (IRR: 1.29, 95 %CI=1.23–1.36), including 17 % more authorised and over twice as many unauthorised absences (IRR: 2.20, 95 % CI=1.85–2.60), and were more than twice as likely to miss ≥10 % of sessions (OR: 2.24, 95 %CI=1.31–3.81). At KS4, they had 30 % more total absences (IRR: 1.30, 95 %CI=1.25–1.34), 16 % more authorised (IRR: 1.16, 95 %CI=1.11–1.21), and 78 % more unauthorised absences (IRR: 1.78, 95 %CI=1.66–1.90). These associations remained significant after adjusting for covariates, though attenuated.

We examined effect modification by all covariates (Appendix E). The link between caring status and absences varied by SEND at KS2 and KS4, and by ethnicity at KS4. Stratified analysis by area deprivation showed disparities only among young carers in the least deprived areas, who were more likely to be persistent absentees (KS2 -OR: 4.86, 95 %CI=1.05–22.4; KS4-OR: 2.31, 95 %CI=1.00–5.33; second quintile OR: 2.41, 95 %CI=1.24,−5.17). Area deprivation did not affect total absent days. No significant differences in absences were found based on care recipient or care intensity (Appendix F).

4. Discussion

Using a large, nationally representative sample, this study provides robust evidence that young carers consistently experience educational disadvantages compared to their non-carer peers. At KS2, they were less likely to meet expected standards in reading, writing, and mathematics, however, most associations were explained by disadvantaged socioeconomic background, with only writing performance remaining significantly associated with young caring status. These gaps persisted into KS4, where young carers achieved fewer GCSEs, lower grades, and were less likely to meet benchmarks such as five or more higher-grade GCSEs, EBacc attainment, and higher average point scores. While socioeconomic disadvantage partly explained these patterns, caring status remained an independent predictor of lower KS4 attainment. After adjusting for background factors, young carers earned fewer and lower-grade qualifications and were significantly less likely to achieve the English EBacc component. This confirms their disadvantage is not solely due to socioeconomic conditions. Absences were also significantly higher among young carers at both Key Stages, with elevated rates of authorised and unauthorised absences, and greater risk of persistent absenteeism.

One explanation for the KS2 pattern is that reading and mathematics may receive more structured teaching support at school, which could buffer some of the disadvantage experienced by young carers with limited support at home. Writing, however, often relies more on independent practice, which may be harder for young carers to sustain given their responsibilities. In addition, some caring tasks—such as assisting with shopping, interpreting medication instructions, or helping parents with paperwork—may help carers develop practical numeracy and reading skills, reducing disparities in these areas. By KS4, the persistent association with English EBacc performance may reflect that this benchmark captures advanced literacy and analytical skills, which require more sustained

Table 3

KS4- Association between young caring and educational attainment (N=2,091).

	Model 1				Model 2			
	Adjusted by Academic year				Adjusted by sociodemographic and SEP			
	IRR	95% CI		p-value	IRR	95% CI		p-value
Number of GCSEs								
GCSE with grade A*-A	0.40	(0.28	0.57)	<0.001	0.60	(0.42	0.84)	0.004
GCSE with grade A*-C	0.68	(0.59	0.78)	<0.001	0.84	(0.74	0.96)	0.011
GCSE with grade A*-G	0.87	(0.81	0.93)	<0.001	0.97	(0.91	1.03)	0.338
GCSE with grade D-G	1.53	(1.31	1.77)	<0.001	1.28	(1.10	1.51)	0.002
	OR	(95% CI)		p-value	OR	(95% CI)		p-value
Achieved 1 or + GCSE at grade								
GCSE with grade A*-A								
Non-carer	Ref				Ref			
Carer	0.39	(0.26	0.56)	<0.001	0.55	(0.35	0.87)	0.012
GCSE with grade A*-C								
Non-carer	Ref				Ref			
Carer	0.43	(0.27	0.68)	<0.001	0.76	(0.42	1.37)	0.366
GCSE with grade D-G								
Non-carer	Ref				Ref			
Carer	2.80	(1.78	4.41)	<0.001	1.99	(1.21	3.29)	0.007
Achieved 5 or + GCSE or equivalent at grade								
Grade level 1: A-G								
Non-carer	Ref				Ref			
Carer	0.59	(0.29	1.19)	0.139	1.04	(0.48	2.27)	0.922
Grade level 2: A-C								
Non-carer	Ref				Ref			
Carer	0.48	(0.33	0.70)	<0.001	0.73	(0.46	1.17)	0.199
Achieved EBacc*								
EBacc Eng&Maths								
Non-Carers	Ref				Ref			
Carers	0.46	(0.31	0.70)	<0.001	0.73	(0.43	1.22)	0.228
EBacc English								
Non-Carers	Ref				Ref			
Carers	0.36	(0.24	0.55)	<0.001	0.56	(0.33	0.93)	0.027
EBacc Maths								
Non-Carers	Ref				Ref			
Carers	0.57	(0.38	0.86)	0.008	1.00	(0.60	1.66)	0.988
	Coeff	95% CI		p-value	Coeff	95% CI		p-value
Average point score**	-38.3	(-54.6	-22.0)	<0.001	-13.9	(-29.9	2.14)	0.089

Weighted values of complete data

KS4- Pooled data 2009-2013

Achieved 1 or + GCSE at grade: Logistic regression

Count of GCSEs: Poisson regression

Achieved 5 or + GCSE or equivalent at grades including English and Math: Logistic regression

Achieved EBacc: Logistic regression

Capped point score: Linear regression

*Pooled data 2010-2013 (N=1,695).

**Pooled data 2011-2013 (N=1,279)

Model 1: Testing association between education outcomes and caring status adjusted by Key Stage 4 academic year.

Model 2: Testing association between education outcomes and caring status adjusted by Key Stage 4 academic year, parental composition, household income, parental occupational class, area deprivation, free school meal eligibility and SEND status.

Abbreviations: GCSE: General Certificate of Secondary Education, OR: Odds ratio, IRR: Incidence Rate Ratio, CI: Confidence Interval, EBacc: English Baccalaureate, Coeff: Coefficient

time investment and specialised support, both of which may be harder for young carers to access.

At KS2, young carers comprised 12.8 % of the sample and were disproportionately from single-parent, low-income households, with higher rates of FSM eligibility. At KS4, they represented 10.6 % of the sample, were more likely to be from Indian, Pakistani, or Bangladeshi backgrounds, live in low-income households, have SEND and qualify for FSM.

Our findings align with and extend previous research. A MYTIME report (2024), based on 130 pupils from seven Dorset primary schools, found 51 % of young carers met the expected standard in reading at KS2, compared with 70 % of peers, with similar gaps in writing and mathematics. While their analysis was descriptive, we observed similar disparities, and our regression analysis confirms that young carers were significantly less likely to meet expected standards: 43 % less likely in reading, 44 % in writing, and 40 % in maths. Analysis of the LSYPE (The Children's Society, 2013) found a 53-point GCSE gap at KS4. Our results echo this (38-point gap) and strengthen the evidence as it is the first UK study to assess young carers' educational outcomes using nationally linked data at this scale while controlling for a wide range of socioeconomic and sociodemographic factors. Using nationally linked administrative and

Table 4
Descriptive of young carer characteristics (%).

	%	
	KS2 (n = 219)	KS4 (n = 244)
Recipient of care		
Other	47.2	39.6
Parent	52.8	60.4
Care Intensity		
1–9 h per week		59.7
10+ hours per week		40.3

Weighted values of imputed data.
Imputed data - only among young carers.
KS2: Pooled data 2011–2018 (*n* = 219).
KS4: Pooled data 2009–2013 (*n* = 244).
Un-weighted distributions presented in Table A2 in Appendix A.

Table 5
Descriptive of Absenteeism outcomes.

	Key stage 2						Key Stage 4					
	All (N = 1597)		Non carer (n = 1385)		Carer (n = 212)		All (N = 2557)		Non carer (n = 2277)		Carer (n = 280)	
	mean	(SE)	mean	SE	mean	SE	mean	SE	mean	SE	mean	SE
Number absent days												
Total abs	6.3	(0.3)	6.1	(0.3)	7.5	(0.6)	10.8	(0.4)	10.4	(0.4)	13.5	(0.9)
Authorised abs	3.0	(0.2)	2.8	(0.2)	3.9	(0.2)	7.0	(0.2)	7.0	(0.2)	7.8	(0.8)
Unauthorised abs	0.4	(0.1)	0.3	(0.04)	0.9	(0.4)	2.3	(0.3)	2.2	(0.3)	3.4	(0.3)
	%		%		%		%		%		%	
Persistent absentee												
Missed 10 %+ sessions												
No	95.9		96.3		94.2		80.3		80.9		75.6	
Yes	4.1		3.7		5.8		19.7		19.1		24.5	
Missed 7 %+ sessions												
No	90.7		91.5		86.6		70.7		71.9		61.9	
Yes	9.3		8.5		13.5		29.3		28.1		38.1	

Weighted values of complete case data.
KS2: Pooled data 20,011–2017 (*n* = 1597).
KS4: Pooled data 2009–2016 (*n* = 2557).
Abbreviations: SE: Standard Error, abs: absences.

survey data, this study confirms patterns observed in smaller-scale studies and expands the evidence base, offering results that are generalisable beyond local or convenience samples

At KS4, young carers missed an average of 13.5 school days per year, compared to 10.4 for non-carers. Persistent absence was also higher: 24.5 % versus 19.1 %. Survey data from the Department for Education (Cheesbrough et al., 2017) found 55 % of young carers' parents reported absences, compared to one-third-of non-carers' parents. While these figures already pointed to a clear attendance gap over a decade ago, more recent national data (2023/24) suggest the gap has widened. Young carers missed an average of 29 days annually versus 17 for peers (Department for Education, 2025). Persistent absence was also higher: 45 % for young carers versus 25 % for peers.

Similar patterns are seen in primary school. The MYTIME Young Carers (2024) found 27 % of young carers were persistently absent, compared to 12 % of non-carers. Our analysis confirms this: young carers were over twice as likely to miss 10 %+ of sessions. Notably, our study is the first to examine absence while controlling for socioeconomic status. The link between caring and absence remains strong even after adjustment, suggesting that caring independently contributes to higher absence rates.

Department for Education data show that 40.2 % of persistently absent pupils achieve expected standards, compared to 65 % of all pupils (Long & Roberts, 2025). The overrepresentation of young carers in absence statistics highlights a key structural barrier to their academic success.

The effects of caring responsibilities extend beyond school. Longitudinal research by Xue et al. (2023) shows young adult carers are less likely to hold a university degree, indicating school-level disadvantage extends well into adulthood.

Unexpectedly, stratified analyses showed that young carers from more advantaged backgrounds, those living in the least deprived areas, with parents in managerial roles, without SEND, and in two-parent households, were especially disadvantaged in attainment and absences. These findings should be interpreted with caution. The results may be an effect of low numbers of young carers by subgroups, and some imbalance in the sample (e.g. 50.3 % in managerial class and 89.3 % white) which limits statistical power. This is the first study to examine how social inequalities intersect with young carer status in school outcomes, with no prior evidence for direct

Table 6

Logistic and Poisson regression testing association between caring status and absences count and persistent absences.

	Model 1 Adjusted by Academic year				Model 2 Adjusted by sociodemographic and SEP			
	Key stage 2 ($n = 1597$).							
Number absent days	IRR	95 % CI		p-value	IRR	95 % CI		p-value
Total absences	1.29	(1.23	1.36)	<0.001	1.22	(1.18	1.27)	<0.001
Authorized abs	1.17	(1.09	1.27)	<0.001	1.16	(1.10	1.23)	<0.001
Unauthorized abs	2.20	(1.85	2.60)	<0.001	1.69	(1.49	1.91)	<0.001
	OR	95 % CI		p-value	OR	95 % CI		p-value
Persistent absentee								
Missed 10 %+ sessions								
Non-carer	Ref				Ref			
Carer	2.24	(1.31	3.81)	0.003	1.00	(0.88	1.13)	0.970
Missed 7 %+ sessions								
Non-carer	Ref				Ref			
Carer	1.95	(1.32	2.87)	0.001	0.98	(0.89	1.07)	0.585
	Key stage 4 ($n = 2557$).							
Count absent days	IRR	95 % CI		p-value	IRR	95 % CI		p-value
Total absences	1.30	(1.25	1.34)	<0.001	1.17	(1.13	1.21)	<0.001
Authorized abs	1.16	(1.11	1.21)	<0.001	1.13	(1.08	1.19)	<0.001
Unauthorized abs	1.78	(1.66	1.90)	<0.001	1.31	(1.22	1.41)	<0.001
	OR	95 % CI		p-value	OR	95 % CI		p-value
Persistent absentee								
Missed 10 %+ sessions								
Non-carer	Ref				Ref			
Carer	1.54	(1.15	2.05)	0.003	1.21	(0.89	1.64)	0.233
Missed 7 %+ sessions								
Non-carer	Ref				Ref			
Carer	1.62	(1.26	2.08)	<0.001	1.35	(1.03	1.75)	0.028

Weighted values of complete data.

KS2: Pooled data 20,011–2017 ($n = 1597$).

KS4: Pooled data 2009–2016 ($n = 2557$).

Abbreviations: OR: Odds ratio, IRR: Incidence Rate Ratio, CI: Confidence Intervals, abs: absences.

comparison.

We found no significant associations between care recipient or intensity and attainment or absence. This may reflect measurement limitations, underpowered analyses due to missing data or low numbers of young carers in some categories, reducing the likelihood of detecting meaningful differences. These findings should therefore be interpreted with caution, as the binary measures of care intensity used here may have obscured variation in young carers' experiences. More detailed measures capturing task complexity and time spent caring could help future studies detect these effects more accurately, especially in small samples. We identified pronounced socioeconomic inequalities among young carers, consistent with previous research (Letelier et al., 2024; Di Gessa et al., 2022; Warren, 2023). This underscores how caring responsibilities intersect with structural disadvantage. For example, families with disabled members face higher living costs (Zaidi & Burchardt, 2005), including specialised equipment and higher utilities (Mitra et al., 2017), and need on average, 29 % more income to attain the same living standard as non-disabled households (Morris et al., 2022).

Notably, young carers were more likely to experience SEND by KS4 (30.6 % vs. 18.9 %). This may suggest caring exacerbates or coincides with developmental needs during adolescence. Prior research found young carers are 1.5 times more likely to have SEND. The lack of this pattern at KS2 may reflect under-identification.

Possible mechanisms for lower attainment and attendance might include the way these responsibilities consume time and energy that would otherwise be devoted to learning. Carers Trust data show 45 % of young carers struggle with exams, 29 % with homework, and 37 % feel they are not reaching their academic potential (Sempik & Becker, 2013). More recent polling highlights a persistent gap in awareness and support: only 26 % of young carers felt their teachers had a good understanding of the challenges they face, and 28 % of teachers said they didn't know if they had young carers in their classroom (Carers Trust, 2024). Emotional burden combined with limited support, can also impact concentration, motivation, and mental health. Holt-White et al. (2022) found 50 % of young carers reported a mental health problem. Tiredness is another factor; Scottish Government (2017) research shows 12 % of young carers fell asleep in class (vs. 3 % of peers).

This study draws on large, nationally representative datasets (UKHLS and NPD), combining self-reported caring status with administrative data of educational outcomes. By leveraging nationally representative, linked administrative and survey data, this study provides the most robust evidence to date of young carers' educational disadvantage, allowing findings to be generalised beyond local or convenience samples. The use of robust statistical methods and rich, linked data strengthens the validity of the findings. A major advantage is the consideration of socioeconomically disadvantage. Though outcomes are from 2018 (KS2) and 2013 (KS4), this time frame is itself revealing: it underscores that the educational challenges faced by young carers are not new or pandemic-specific.

There are also some limitations. Capturing care characteristics remains challenging due to missing data and measurement constraints. Young caring status were measured as binary variables, which may mask variations and attenuate effects; however, we

explored care intensity to partially address this. The linked NPD sample slightly overrepresents higher-performing pupils (Appendix G), common in surveys where advantaged individuals are more likely to participate. To address this, we applied weights to adjust for the sampling design and preserve representativeness as much as possible. Young carers may also be less likely to participate in surveys due to stigma or time constraints, potentially leading to an underestimation of disadvantage. Further work is needed to reach and retain those with the highest caring intensity. Finally, this study does not capture changes in caring roles over time. Caring responsibilities are dynamic and may begin or end in response to family circumstances or external support, potentially influencing educational outcomes. Future longitudinal research could provide further insight into the persistence of these effects.

5. Conclusion

Young carers face substantial educational disadvantages, with early gaps in attendance and attainment. These challenges are closely, but not entirely, linked to socioeconomic disadvantage. By KS2, they were more likely to fall below expected standards; by KS4, they achieved fewer qualifications and key benchmarks, putting future opportunities at risk. Support is urgently needed to help young carers balance responsibilities and education, ensuring they are not left behind. Our findings underscore the need for early identification and support, particularly during primary years when gaps first emerge. Schools should monitor attendance and offer tailored support. Young carers must be explicitly included within wider education policy as a vulnerable group. Policy must also address wider structural and family-level barriers. A coordinated approach across education, social care, and health is essential to reduce inequality and help young carers thrive.

Funding

Ethical approval statement

This study utilised secondary data from Understanding Society: the UK Household Longitudinal Study (UKHLS) and the National Pupil Database (NPD). Ethical approval for Understanding Society data collection was obtained by the University of Essex Ethics Committee, and participants provided informed consent for data linkage. Access to linked UKHLS-NPD data was granted through the UK Data Service SecureLab, adhering to rigorous ethical and legal standards, including compliance with the General Data Protection Regulation (GDPR) and the UK Data Protection Act 2018.

Data availability

This study uses data from:

Understanding society

University of Essex, Institute for Social and Economic Research (2023). *Understanding Society: Waves 1–13, 2009–2022 and harmonised BHPS: Waves 1–18, 1991–2009* [Data collection], 18th Edition. UK Data Service, SN: 6614, DOI: 10.5255/UKDA-SN-6614–19.

Linked education administrative data (National pupil database)

Department for Education and University of Essex, Institute for Social and Economic Research (2022). *Understanding Society: Linked Education Administrative Datasets (National Pupil Database), England, 1995–2018: Secure Access* [Data collection], 3rd Edition. UK Data Service, SN: 7642, DOI: 10.5255/UKDA-SN-7642–3.

Access to these datasets is provided by the UK Data Service under controlled conditions via the SecureLab.

CRediT authorship contribution statement

Alejandra Letelier: Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Anne McMunn:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Andy McGowan:** Writing – review & editing. **Krista Cartlidge:** Writing – review & editing. **Rebecca Lacey:** Writing – review & editing, Writing – original draft, Supervision, Resources, Project administration, Methodology, Funding acquisition, Conceptualization.

Declaration of competing interest

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Appendix A. - KS2 and KS4 Descriptive demographics and socioeconomic characteristics complete case analysis. Comparison between Un-weighted and Weighted distributions. Key Stage 2: Pooled data from 2011 to 2018 ($N = 1740$). Key Stage 4: Pooled data from 2009 to 2013 ($N = 2091$)

Table A1
Descriptive demographics, socioeconomic characteristics and educational attainment.

Complete case Analysis sample weighted and unweighted data (%).												
	Key Stage 2						Key Stage 4					
	All		Non-Carers		Carers		All		Non-Carers		Carers	
N	1740		1521		219		2091		1847		244	
Carer status	Un-wt %	Wt %	Un-wt %	Wt %	Un-wt %	Wt %	Un-wt %	Wt %	Un-wt %	Wt %	Un-wt %	Wt %
Non-Carer	87.4	87.2					88.3	89.4				
Carer	12.6	12.8					11.7	10.6				
Gender												
Men	49.5	49.5	49.6	49.6	49.3	48.7	47.8	48.5	47.9	48.6	47.5	47.6
Women	50.5	50.5	50.4	50.4	50.7	51.3	52.2	51.5	52.1	51.4	52.5	52.4
Ethnicity												
White	76.4	89.3	76.8	89.4	74.0	88.6	74.0	87.2	72.5	88.0	64.8	81.1
Black	5.9	3.0	5.6	2.9	8.2	4.0	8.4	4.2	8.6	4.3	7.0	3.7
Pakistani/Bangladeshi/Indian	12.7	4.3	13.0	4.4	10	3.6	12.6	5.1	11.3	4.4	22.5	10.0
Other	4.9	3.4	4.6	3.3	7.3	3.8	5.0	3.5	4.9	3.3	5.7	5.2
Parental comp												
Two parent hh	79.7	80.2	80.9	81.7	71.2	70.2	72.7	73.8	72.3	73.7	75.8	75.3
Single parent hh	20.3	19.8	19.1	18.3	28.8	29.9	27.3	26.2	27.7	26.3	24.2	24.7
Household income												
Highest quintile	19.2	21.0	19.2	20.9	19.2	21.9	16.7	18.3	17.8	19.3	8.6	9.7
Second quintile	19.3	20.8	19.3	20.8	19.2	21.2	19.7	21.4	20.5	22.1	13.9	15.3
Third quintile	20.5	21.6	20.8	22.0	18.3	18.7	21.4	21.7	21.6	21.7	19.7	21.7
Fourth quintile	22.1	20.7	22.1	20.9	21.9	19.2	22.2	22.4	21.4	21.9	27.9	26.9
Lowest quintile	19.0	15.9	18.6	15.5	21.5	19.0	20.0	16.2	18.7	15.0	29.9	26.5
Occupational class												
Managerial	47.1	50.3	47.6	50.7	43.8	47.1	38.2	40.6	40.5	42.7	20.9	22.8
Intermediate	19.9	19.3	19.7	18.9	21.0	22.0	19.2	19.8	19.7	20.4	16.0	14.6
Routine	18.7	18.1	19.3	18.8	15.1	13.2	24.2	23.9	24.7	24.3	20.5	20.8
Not in paid work	14.3	12.3	13.4	11.6	20.1	17.7	18.4	15.7	15.2	12.7	42.6	41.8
IMD												
Least deprived	21.2	24.4	22.0	25.1	15.5	19.3	15.6	17.7	16.6	18.4	8.6	11.6
Second quintile	16.7	19.0	16.6	18.9	17.4	19.6	18.5	21.6	19.4	22.6	11.1	12.7
Third quintile	18.8	19.8	19.1	20.0	16.9	18.8	18.4	19.1	18.6	19.2	17.2	18.4
Fourth quintile	19.5	18.5	19.3	18.6	21.0	17.8	21.4	19.6	21.1	19.2	23.8	22.7
Most deprived	23.9	18.3	23.1	17.4	29.2	24.5	26.1	22.1	24.3	20.7	39.3	34.6
SEND												
Not reported	87.8	88.1	87.8	88.1	88.1	88.0	79.7	79.9	81.3	81.1	68.0	69.4
Reported	12.2	11.9	12.2	11.9	11.9	12.0	20.3	20.2	18.7	18.9	52.1	30.6
Type of school												
Community school	55.3	53.1	54.2	51.7	63.0	62.4	45.2	44.4	44.9	44.1	48.0	47.3

Table A1 (*continued*)

Complete case Analysis sample weighted and unweighted data (%).

	Key Stage 2						Key Stage 4					
	All		Non-Carers		Carers		All		Non-Carers		Carers	
N	1740		1521		219		2091		1847		244	
Carer status	Un-wt %	Wt %	Un-wt %	Wt %	Un-wt %	Wt %	Un-wt %	Wt %	Un-wt %	Wt %	Un-wt %	Wt %
Shared control/autonom	44.7	46.9	45.8	48.3	37.0	37.6	54.8	55.6	55.1	55.9	52.1	52.7
FSM eligible												
Not reported	86.5	88.8	88.0	90.0	76.3	80.0	70.9	75.1	73.5	77.8	51.2	51.7
Reported	13.5	11.2	12.0	10.0	23.7	20.0	29.1	24.9	26.5	22.2	48.8	48.3
KS2 Educational Outcomes (%)												
Performance all three subjects (read, maths and write)												
Below expected standard	23.3	21.8	22.8	22.3	26.9	28.6						
Above expected standard	76.7	78.2	77.3	77.7	73.1	71.4						
Performance Reading												
Below expected standard	12.8	11.4	12.5	11.0	14.8	13.9						
Above expected standard	87.2	88.6	87.5	89.0	85.2	86.1						
Performance Maths												
Below expected standard	13.5	12.1	12.9	11.4	16.7	15.6						
Above expected standard	86.6	87.9	87.1	88.6	83.3	84.4						
Performance Writing												
Below expected standard	14.1	13.6	13.2	12.4	19.4	19.8						
Above expected standard	85.9	86.4	86.8	87.6	80.6	80.2						
							KS4 Educational Outcomes(%)					
Number GCSE												
GCSE with grade A*-A												
None							57.3	57.7	55.4	55.6	72.1	75.9
1 or more							42.7	42.3	44.6	44.5	27.9	24.1
GCSE with grade A*-C												
None							12.7	12.9	11.5	11.7	22.1	23.3
1 or more							87.3	87.1	88.5	88.3	77.9	76.7
GCSE with grade D-G												
None							37.5	38.0	39.9	40.1	20.1	19.7
1 or more							62.5	62.0	60.2	59.9	79.9	80.3
Achieved 5 or + GCSE or equivalent at grades												
At Grade level 1: A*-G												
No							3.7	3.8	3.5	3.6	5.3	5.7
Yes							96.4	96.2	96.5	96.5	94.7	94.3
At Grade level 2: A*-C												
No							37.6	37.4	35.9	35.8	50.4	51.4
Yes							62.4	62.6	64.1	64.2	49.6	48.6
Achieved EBacc												
EBacc Eng&Maths												
No						35.6	34.9	33.5	32.9	49.8	50.3	
Yes						62.4	65.1	66.5	67.1	50.2	49.7	
EBacc English												
No						26.5	25.8	24.1	23.4	43.2	44.8	
Yes						73.5	74.2	75.9	76.6	56.8	55.3	
EBacc Maths												
No						27.7	27.6	26.5	26.3	36.6	37.1	
Yes						72.3	72.5	73.6	73.7	63.4	62.9	

Unweighted and Weighted percentages of complete data.

KS2-Pooled data from 2011 to 2018 (N=1,740).

KS4- Pooled data from 2009 to 2013 (N=2,091).

*P-value from weighted crude logistic regression model testing the association between caring status and each covariate.

** EBacc was measured from 2010 to 2013 (n=1,275).

***Capped point score was measured from 2011 to 2013 (n=1,695).

Abbreviations: SEND: Special Educational Needs and Disability, IMD: Index Multiple deprivation, SE: Standard Error, EBacc: English Baccalaureate, GCSE: General Certificate of Secondary Education. SE: Standard Error.

Type of school: community school and Shared control or autonomously operated school.

Table A2

Descriptive of young carers characteristics.Attainment analysis sample Weighted and unweighted data (%).

	Key stage 2 (n = 219)		Key Stage 4 (n = 244)	

Table A2 (*continued*)

	Key stage 2 (n = 219)			Key Stage 4 (n = 244)	
	Un-wt %	Wt %		Un-wt %	Wt %
	Un-wt %	Wt %		Un-wt %	Wt %
Care Intensity					
1–9 hrs. per week				59.3	59.7
10+ hrs. per week				40.7	40.3
Recipient of care					
Other	45.9	47.2		39.1	39.6
Parent	54.1	52.8		60.9	60.4

Unweighted and Weighted values of imputed data.

Imputation conducted only among young carers.

KS2-Pooled data from 2011 to 2018 (n = 219).

KS4-Pooled data from 2009 to 2013 (n = 244).

Abbreviations: Un-wt: Un-weighted values of imputed data, Wt: Weighted values of imputed data.

Appendix B. – Effect modification and stratified analysis tables. Effect modification was assessed using p-values from interaction terms between caring status and covariates in Model 1, which tested the association between caring status and educational attainment adjusted for academic year

Table B1

Effect modification on the association between caring status and educational attainment by covariates (p-values).

	Key stage 2 (N = 1740)			Key Stage 4 (N = 2091)								
	Reading	Math	Writing	At least 1 GCSE at			Achieve 5+ GCSE at		EBacc			Score point
Gender				A-A*	A*-C	D-G	A*-C	A*-G	E&M	Eng	Mat	
Men	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Women	0.136	0.182	0.327	0.576	0.647	0.809	0.818	0.618	0.986	0.910	0.651	0.670
Ethnicity												
White	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Black	0.824	0.165	0.923	0.833	0.398	0.238	*	0.351	0.347	0.283	0.455	0.699
Pakistani/Bangladeshi/Indian	0.088	0.129	0.116	0.927	0.256	0.090	0.422	0.434	0.430	0.327	0.093	0.149
Other	0.169	0.612	0.874	0.291	0.540	0.87	*	0.733	0.591	0.775	0.668	0.642
Parental composition												
Two parent hh	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Single parent hh	0.708	0.994	0.389	0.133	0.556	0.973	0.035	0.640	0.692	0.449	0.945	0.854
Household income												
Highest quintile	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Second quintile	0.624	0.845	0.263	0.651	0.977	0.770	0.083	0.632	0.506	0.500	0.504	0.403
Third quintile	0.704	0.303	0.144	0.867	0.591	0.949	*	0.605	0.847	0.778	0.611	0.784
Fourth quintile	0.714	0.915	0.781	0.760	0.942	0.724	0.024	0.791	0.526	0.603	0.481	0.934
Lowest quintile	0.510	0.979	0.699	0.751	0.815	0.659	*	0.506	0.976	0.899	0.545	0.726
Occupational class												
Managerial	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Intermediate	0.763	0.431	0.150	0.807	0.942	0.683	0.114	0.425	0.425	0.517	0.815	0.414
Routine	0.006	0.257	0.243	0.094	0.189	0.227	0.736	0.178	0.480	0.363	0.803	0.436
Not in paid work	0.295	0.100	0.030	0.283	0.768	0.789	*	0.481	0.602	0.517	0.185	0.726
Area deprivation												
Least deprived	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Second quintile	0.690	0.715	0.429	0.821	0.937	0.868	0.832	0.861	0.912	0.802	0.389	0.188
Third quintile	0.378	0.831	0.736	0.587	0.430	0.855	0.273	0.252	0.159	0.111	0.239	0.082
Fourth quintile	0.547	0.518	0.991	0.44	0.923	0.879	0.626	0.878	0.945	0.814	0.901	0.292
Most deprived	0.624	0.430	0.926	0.529	0.920	0.721	*	0.868	0.810	0.865	0.697	0.089
SEND												
Not reported	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Reported	0.339	0.176	0.951	0.044	0.035	0.003	0.573	0.208	0.124	0.099	0.207	0.285
Type of school												
Community school	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Shared control/aut	0.842	0.928	0.418	0.686	0.595	0.257	0.227	0.382	0.429	0.544	0.288	0.291
FSM eligible												
Not reported	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Reported	0.364	0.180	0.068	0.779	0.757	0.704	0.186	0.348	0.339	0.834	0.832	0.993

Weighted values of complete case data.

KS2 Pooled data 2011–2018 (N = 1740).

KS4 Pooled data 2009–2013 (N = 2091).

p-value from interaction term between caring status and covariates in Model 1 testing the association between educational attainment and caring status.

NC: national curriculum, SEND: Special Educational Needs and Disability, IMD: Index of Multiple deprivation, Aut: autonomy school, FSM: Free School Meal.

point score: Pooled data 2011–2013 ($n = 1279$).

EBacc: Pooled data 2010–2013 ($N = 1695$).

Stratified analyses performed when significant interactions were detected.

Table B2

KS2 Stratified analysis. Logistic regression testing association between caring status and educational attainment by parental occupational class (N=1,740).

Model 1 adjusted by academic year.								
	Managerial (n= 820; carers n=96)				Intermediate (n= 346; carers n=46)			
	OR	95% CI		p-value	OR	95% CI		p-value
Performed at or above the expected standard								
All three subjects								
Non-Carer	Ref				Ref			
Carer	0.42	(0.22	0.78)	0.007	0.70	(0.30	1.64)	0.398
Reading								
Non-Carer	Ref				Ref			
Carer	0.42	(0.20	0.88)	0.022	0.42	(0.16	1.12)	0.082
Maths								
Non-Carer	Ref				Ref			
Carer	0.53	(0.21	1.34)	0.177	0.69	(0.21	2.24)	0.518
Writing								
Non-Carer	Ref				Ref			
Carer	0.31	(0.15	0.62)	0.001	0.71	(0.24	2.10)	0.514
	Routine (n= 326; carers n=33)				**Not in paid work** (n=248; carers n=44)			
All three subjects								
Non-Carer	Ref				Ref			
Carer	1.05	(0.41	2.67)	0.919	1.04	(0.44	2.47)	0.923
Reading								
Non-Carer	Ref				Ref			
Carer	2.95	(0.52	16.7)	0.209	0.52	(0.21	1.24)	0.127
Maths								
Non-Carer	Ref				Ref			
Carer	0.86	(0.37	2.02)	0.718	0.70	(0.19	2.51)	0.558
Writing								
Non-Carer	Ref				Ref			
Carer	0.80	(0.33	1.95)	0.613	1.10	(0.39	3.07)	0.845

Weighted values of complete case data

KS2 Pooled data 2011-2018

Model 1: Testing association between education outcomes and caring status adjusted by Key Stage 2 academic year.

Performance English Reading: Pooled data from National Curriculum level reported between 2011-2015 and from Scaled reading score reported between 2016-2018.

Performance Math: pooled data from National Curriculum level reported between 2011-2015 and from Scaled math score reported between 2016-2018.

Performance English Writing: Pooled data from National Curriculum level reported between 2011 and from National Curriculum Teacher Assessment reported between 2012-2015 and writing score Teacher Assessment reported between 2016-2018.

Performance all: performed at or above the expected level at the three core subjects: English reading, mathematic and English writing.

Abbreviations: OR: Odds Ratio, CI: Confidence Interval.

Table B3

KS4 Stratified analysis. Logistic regression testing association between caring status and educational attainment by SEND ($N = 2091$). Model 1 adjusted by academic year.

	No SEND (n = 1483; carers n = 125)				SEND (n = 608; carers n = 119)			
	OR	95 %CI		p-value	OR	95 %CI		p-value
At least one GCSE at grade								
GCSE grade A*-A								
Non-carer	Ref				Ref			
Carer	0.38	(0.25	0.57)	<0.001	0.84	(0.57	1.25)	0.384
GCSE grade A*-C								
Non-carer	Ref				Ref			
Carer	0.33	(0.18	0.64)	0.001	0.84	(0.33	2.08)	0.687
GCSE grade ᴅ-G								

Table B3 (*continued*)

	No SEND (*n* = 1483; carers *n* = 125)				SEND (*n* = 608; carers *n* = 119)			
	OR	95 %CI		p-value	OR	95 %CI		p-value
Non-carer	Ref				Ref			
Carer	3.00	(1.80	5.01)	<0.001	1.06	(0.48	2.33)	0.874
	Two parents household (*n* = 1520; carers *n* = 185)				**Single parent household** (*n* = 571; carers *n* = 59)			
Achieved 5 or + GCSE or equivalent at grades								
Level 1: A*-G								
Non-carer	Ref				Ref			
Carer	0.35	(0.19	0.64)	0.001	1.87	(0.98	3.57)	0.058
Level 2: A*-C								
Non-carer	Ref				Ref			
Carer	0.42	(0.27	0.65)	<0.001	0.67	(0.31	1.41)	0.280

Weighted values of complete data.

KS4 Pooled data 2009–2013.

Achieved 1 or + GCSE at grade: Logistic regression.

Achieved 5 or + GCSE or equivalent at grades including English and Math: Logistic regression.

Model 1: Testing association between education outcomes and caring status adjusted by Key Stage 4 academic year.

Abbreviations: GCSE: General Certificate of Secondary Education, OR: Odds ratio, CI: Confidence Interval, SEND: Special Educational Needs and Disability, Hh: Household.

Appendix C. – Association between educational attainment at KS2 and KS4 by young carer characteristics: care recipient and care intensity

Table C1

KS2 - Logistic regression testing association between educational attainment and care recipient (n=219).

Care recipient: Other/Parent. Reference group: Other.

Performed at or above the expected standard.

	Model 1 Adjusted by Academic year			
	OR	95%CI		p-value
Performance All				
Other	Ref			
Parent	0.85	(0.12	5.93)	0.779
Performance Reading				
Other	Ref			
Parent	0.31	(0.03	3.75)	0.175
Performance Maths				
Other	Ref			
Parent	0.95	(0.15	6.26)	0.931
Performance Writing				
Other	Ref			
Parent	0.85	(0.08	9.42)	0.779

Weighted analysis of Imputed data.

Pooled data 2011-2018.Analysis only among carers.

Model 1: Education outcomes and caring status adjusted by Key Stage 2 academic year.

Performance all: perform at or above the expected level at the three core subjects: English reading, mathematic and English writing.

Abbreviations: OR: Odds ratio, CI: Confidence Interval

Table C2

KS4- Logistic, Poisson and Linear regression testing association between educational attainment and care recipient (*n* = 244).Care recipient: Other/Parent. Reference group: Other.

	Model 1 Adjusted by Academic year			
	IRR	95 %CI		p-value
Number of GCSEs				
GCSE with grade A*-A	0.73	(0.36	1.48)	0.330

Table C2 (*continued*)

	Model 1 Adjusted by Academic year			
	IRR	95 %CI		p-value
GCSE with grade A*-C	0.82	(0.57	1.19)	0.251
GCSE with grade A*-G	1.00	(0.85	1.18)	0.971
GCSE with grade D-G	1.39	(0.89	2.17)	0.127
	OR	(95 %CI)		p-value
Achieved 1 or + GCSE at grade				
GCSE with grade A*-A				
Other	Ref			
Parent	0.65	(0.29	1.45)	0.246
GCSE with grade A*-C				
Other	Ref			
Parent	0.65	(0.16	2.72)	0.513
GCSE with grade D-G				
Other	Ref			
Parent	1.56	(0.66	3.65)	0.268
Achieved 5 or + GSCE or equivalent at grades				
Level 1: A*-G				
Other	Ref			
Parent	1.41	(0.10	19.6)	0.771
Level 2: A*-C				
Other	Ref			
Parent	0.60	(0.24	1.49)	0.231
Achieved EBacc				
EBacc Eng&Maths				
Other	Ref			
Parent	0.64	(0.26	1.56)	0.278
EBacc English				
Other	Ref			
Parent	0.76	(0.31	1.85)	0.495
EBacc Maths				
Other	Ref			
Parent	0.65	(0.23	1.84)	0.360
	Coeff	95 %CI		p-value
Average point score	−24.5	(−97.5	48.5)	0.440

Weighted analysis of Imputed data.
Pooled data 2009–2013. Analysis only among carers.
Achieved 1 or + GCSE at grade: Logistic regression.
Count of GCSEs: Poisson regression.
Achieved 5 or + GSCE or equivalent at grades including English and Math Logistic regression.
Achieved EBacc: Logistic regression.
Capped point score: Linear regression.
Model 1: Education outcomes and caring status adjusted by Key Stage 4 academic year.
Abbreviations: GCSE: General Certificate of Secondary Education, OR: Odds ratio, IRR: Incidence Rate Ratio, CI: Confidence Interval, EBacc: English Baccalaureate, Coeff: Coefficient.

Appendix D. - KS2 and KS4 Absences analysis samples. Descriptive demographics and socioeconomic characteristics complete case analysis Un-weighted and Weighted distributions. Key Stage 2: Pooled data from 2011 to 2017 ($N = 1597$). Key Stage 4: Pooled data from 2009 to 2016 ($N = 2557$)

Table D1

Table D1
Descriptive demographics, socioeconomic characteristics. Absences analysis sample.

Complete case Analysis sample weighted and unweighted data (%).

	Key Stage 2 (N=1,579)						Key Stage 4 (N=2,091)					
	All		Non-Carers		Carers		All		Non-Carers		Carers	
N	1597		1385		212		2557		2277		280	
Carer status	Un-wt%	Wt%	Un-wt%	Wt%	Un-wt%	Wt%	Un-wt%	Wt%	Un-wt%	Wt%	Un-wt%	Wt%
Non-Carer	86.7	86.7					89.1	89.6				
Carer	13.3	13.2					11.0	10.4				
Gender												
Men	49.8	49.4	49.5	49.3	51.4	50.2	48.0	48.3	47.8	48.3	49.3	48.2

(*continued on next page*)

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Table D1 (*continued*)

Complete case Analysis sample weighted and unweighted data (%).

	Key Stage 2 (N=1,579)						Key Stage 4 (N=2,091)					
	All		Non-Carers		Carers		All		Non-Carers		Carers	
N	1597		1385		212		2557		2277		280	
Carer status	Un-wt%	Wt%	Un-wt%	Wt%	Un-wt%	Wt%	Un-wt%	Wt%	Un-wt%	Wt%	Un-wt%	Wt%
Women	50.2	50.6	50.5	50.7	48.6	49.8	52.0	51.7	52.2	51.7	50.7	51.8
Ethnicity												
White	76.6	89.4	77.0	89.6	73.6	88.4	73.7	87.8	74.4	88.3	67.5	83.4
Black	5.9	3.0	5.6	2.8	7.6	3.9	8.8	4.1	8.7	4.1	8.9	4.3
Pakistani/Bangladeshi/Indian	12.5	4.2	12.6	4.2	11.8	3.8	12.9	4.9	12.3	4.6	17.9	7.1
Other	5.0	3.5	4.7	3.4	7.1	3.9	4.7	3.2	4.5	3.0	5.7	5.1
Parental comp												
Two parent hh	79.2	79.5	80.4	81.0	71.2	69.9	73.3	74.1	73.3	74.2	72.9	73.5
Single parent hh	20.8	20.5	19.6	19.0	28.8	30.1	26.8	25.9	26.7	25.8	27.1	26.5
Household income												
Highest quintile	19.4	21.2	19.4	20.9	19.8	22.6	16.3	18.2	17.2	19.3	8.6	9.1
Second quintile	19.2	20.6	19.2	20.5	19.3	21.3	18.0	19.5	18.6	20.0	13.2	15.1
Third quintile	20.7	22.0	21.1	22.4	18.4	19.4	20.5	21.2	20.4	20.9	21.8	23.9
Fourth quintile	21.9	20.7	22.0	21.1	21.2	18.2	23.9	24.1	23.6	23.7	26.4	27.4
Lowest quintile	18.7	15.6	18.3	15.1	21.2	18.6	21.2	17.0	20.2	16.2	30.0	24.4
Occupational class												
Managerial	46.8	49.5	47.4	50.1	42.5	45.7	38.9	41.4	40.5	43.0	25.7	27.8
Intermediate	20.0	19.3	19.7	18.7	22.2	23.2	19.4	19.5	19.8	19.9	16.1	15.7
Routine	18.9	18.5	19.4	19.2	16	13.8	24.0	23.9	24.0	23.8	23.9	24.7
Not in paid work	14.3	12.7	13.5	12.0	19.3	17.4	17.8	15.3	15.7	13.3	34.3	31.9
IMD												
Least deprived	20.8	23.8	21.6	24.5	15.6	19.3	16.4	18.8	17.0	19.4	10.7	13.3
Second quintile	17.2	19.4	17.0	19.3	17.9	20.2	18.4	21.6	19.1	22.5	12.9	14.1
Third quintile	18.8	19.8	19.2	20.0	16.0	18.3	17.6	18.2	17.8	18.2	16.1	18.2
Fourth quintile	19.6	18.7	19.5	18.9	20.3	17.3	21.7	19.5	21.2	18.7	26.1	26.1
Most deprived	23.7	18.3	22.7	17.3	30.2	24.9	25.9	21.9	24.9	21.2	34.3	28.4
SEND												
Not reported	87.3	87.5	87.2	87.4	87.7	88.2	81.0	80.8	81.6	81.3	76.1	76.3
Reported	12.7	12.5	12.8	12.6	12.3	11.8	19.1	19.2	18.5	18.7	23.9	23.7
Type of school												
Community school	56.0	53.3	54.7	51.8	64.6	63.4	41.3	40.9	41.7	41.2	38.2	38.4
Shared control/autonom	44.0	46.7	45.3	48.2	35.4	36.7	58.7	59.1	58.3	58.8	61.8	61.6
FSM eligible												
Not reported	85.9	88.0	87.2	89.2	77.4	80.7	70.0	74.8	71.7	76.6	56.1	59.7
Reported	14.1	12.0	12.8	10.8	22.6	19.3	30.0	25.2	28.3	23.4	43.9	40.3

Unweighted and Weighted percentages of complete data.

KS2-Pooled data from 2011 to 2018 (N=1,597).

KS4- Pooled data from 2009 to 2013 (N=2,557).

Abbreviations: SEND: Special Educational Needs and Disability, IMD: Index Multiple deprivation

Type of school: community school and Shared control or autonomously operated school.

*P-value from weighted crude logistic regression model testing the association between caring status and each covariate.

Appendix E. – Effect modification and stratified analysis tables. Effect modification was assessed using p-values from interaction terms between caring status and covariates in Model 1, which tested the association between caring status and school absences adjusted for academic year

Tables E1,E2 and E3

Table E1

Effect modification on the association between caring status and school absences by covariates (p-values).

	Total abs Key stage 2 (N = 1597)	Autho abs	Unaut abs	Persis 10	Persis 7	Total abs Key stage 4 (2091)	Autho abs	Unaut abs	Persis 10	Persis 7
Gender										
Men	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Women	0.521	0.613	0.396	0.202	0.238	0.738	0.824	0.179	0.720	0.475
Ethnicity										
White	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref

(*continued on next page*)

Table E1 (*continued*)

	Total abs Key stage 2 (N = 1597)	Autho abs	Unaut abs	Persis 10	Persis 7	Total abs Key stage 4 (2091)	Autho abs	Unaut abs	Persis 10	Persis 7
Black	0.875	0.496	0.204	0.153	0.623	0.139	0.136	0.267	0.283	0.367
Pakistani/Bangladeshi/ Indian	0.839	0.482	0.838	0.555	0.494	0.963	0.814	0.619	0.423	0.726
Other	0.037	0.001	0.044	o	0.058	0.654	0.524	0.826	0.595	0.874
Parental composition										
Two parent Hh	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Single parent Hh	0.429	0.370	0.316	0.299	0.267	0.346	0.710	0.523	0.981	0.635
Household income										
Highest quintile	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Second quintile	0.184	0.797	0.633	0.300	0.208	0.341	0.677	0.512	0.791	0.371
Third quintile	0.351	0.882	0.309	0.563	0.197	0.937	0.680	0.930	0.248	0.345
Fourth quintile	0.183	0.481	0.253	0.190	0.268	0.421	0.476	0.260	0.314	0.256
Lowest quintile	0.782	0.607	0.863	0.833	0.423	0.751	0.876	0.734	0.462	0.432
Occupational class										
Managerial	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Intermediate	0.454	0.276	0.448	0.329	0.202	0.319	0.437	0.238	0.201	0.938
Routine	0.522	0.149	0.768	0.341	0.517	0.867	0.707	0.152	0.273	0.255
Not in paid work	0.742	0.248	0.810	0.173	0.326	0.126	0.580	0.662	0.88	0.688
IMD										
Least deprived	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Second quintile	0.925	0.749	0.008	0.452	0.754	0.831	0.728	0.056	0.694	0.363
Third quintile	0.240	0.160	0.032	0.088	0.653	0.185	0.734	0.980	0.706	0.732
Fourth quintile	0.915	0.789	0.547	0.494	0.600	0.124	0.734	0.872	0.597	0.602
Most deprived	0.579	0.565	0.054	0.218	0.721	0.723	0.886	0.209	0.898	0.843
SEND										
Not reported	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Reported	0.780	0.730	0.208	0.724	0.298	0.943	0.658	0.979	0.600	0.395
Type of school										
Community school	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Shared control/auton	0.651	0.279	0.211	0.324	0.972	0.215	0.680	0.471	0.280	0.893
Free School Meal										
No reported	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Reported	0.933	0.437	0.227	0.202	0.312	0.503	0.601	0.807	0.237	0.448

Weighted values of complete data.

KS2 Pooled data 2011–2017 (N = 1597).

KS4 Pooled data 2009–2016 (N = 2557).

p-value from interaction term between caring status and covariates in Model 1 testing the association between school absences and caring status.

Abbreviations: Abs: absences, Author: authorized, Unauth: unauthorized, Persit: persistent Absenteeism, Hh: household, auton: autonomy school, SEND: Special edicational needs, IMD: index Multiple Deprivation.

Stratified analyses performed when significant interactions were detected.

Table E2

KS2 and KS4 Stratified analysis. Logistic regression testing association between caring status and absences by area deprivation.

IMD quintiles	Key Stage 2 (N = 1597) Model 1 Adjusted by Academic year				Key stage 4 (N = 2091) Model 1 Adjusted by Academic year			
Least deprived area (n = 332, carers=33) (KS4: n = 418, carers=30)								
Number absent days	IRR	95 %CI		p-value	IRR	95 %CI		p-value
Total absences	1.44	(1.26	1.64)	<0.001	1.45	(1.32	1.60)	<0.001
Authorized absences	1.06	(0.87	1.28)	0.541	1.10	(0.96	1.26)	0.167
Unauthorized absences	11.4	(6.11	21.3)	<0.001	0.86	(0.62	1.21)	0.408
Persistent absentee								
Missed 10 %+ sessions	OR	95 %CI		p-value	OR	95 %CI		p-value
Non-carer	Ref				Ref			
Carer	4.86	(1.05	22.4)	0.043	2.31	(1.00	5.33)	0.049
Missed 7 %+ sessions								
Non-carer	Ref				Ref			
Carer	1.78	(0.54	5.87)	0.340	1.94	(0.93	4.04)	0.076
Second quintile (n = 274, carers=38) (KS4: n = 470, carers=36)								
Number absent days	IRR	95 %CI		p-value	IRR	95 %CI		p-value
Total absences	1.53	(1.36	1.73)	<0.001	1.39	(1.27	1.52)	<0.001
Authorized absences	1.25	(1.05	1.49)	0.010	1.34	(1.18	1.52)	<0.001
Unauthorized absences	0.49	(0.21	1.12)	0.092	3.44	(2.82	4.19)	<0.001

Table E2 (*continued*)

IMD quintiles	Key Stage 2 (N = 1597)				Key stage 4 (N = 2091)			
	Model 1 Adjusted by Academic year				Model 1 Adjusted by Academic year			
Least deprived area (n = 332, carers=33) (KS4: n = 418, carers=30)								
Persistent absentee								
Missed 10 %+ sessions	OR	95 %CI		p-value	OR	95 %CI		p-value
Non-carer	Ref				Ref			
Carer	2.78	(0.64	11.9)	0.170	2.41	(1.24	5.17)	0.024
Missed 7 %+ sessions								
Non-carer	Ref				Ref			
Carer	2.74	(0.96	7.85)	0.060	1.83	(0.91	3.67)	0.089
Third quintile (KS2: n = 300, carers=34) (KS4: n = 450, carers=45)								
Number absent days	IRR	95 %CI		p-value	IRR	95 %CI		p-value
Total absences	1.00	(0.88	1.14)	0.953	1.16	(1.06	1.26)	0.001
Authorized absences	0.81	(0.65	1.01)	0.065	1.05	(0.94	1.18)	0.366
Unauthorized absences	1.74	(1.05	2.89)	0.031	0.84	(0.69	1.04)	0.110
Persistent absentee								
Missed 10 %+ sessions	OR	95 %CI		p-value	OR	95 %CI		p-value
Non-carer	Ref				Ref			
Carer	0.62	(0.08	5.01)	0.652	1.27	(0.59	2.71)	0.529
Missed 7 %+ sessions								
Non-carer	Ref				Ref			
Carer	1.09	(0.36	3.35)	0.877	1.48	(0.79	2.79)	0.222
Fourth quintile (KS2: n = 313, carers=43) (KS4: n = 556, carers=73)								
Number absent days	IRR	95 %CI		p-value	IRR	95 %CI		p-value
Total absences	1.19	(1.08	1.33)	0.001	1.26	(1.17	1.35)	<0.001
Authorized absences	1.56	(1.32	1.85)	<0.001	1.35	(1.23	1.49)	<0.001
Unauthorized absences	1.67	(1.00	2.79)	0.046	1.38	(1.16	1.63)	<0.001
Persistent absentee								
Missed 10 %+ sessions	OR	95 %CI		p-value	OR	95 %CI		p-value
Non-carer	Ref				Ref			
Carer	2.28	(0.75	6.86)	0.143	1.24	(0.67	2.30)	0.501
Missed 7 %+ sessions								
Non-carer	Ref				Ref			
Carer	1.70	(0.77	3.71)	0.188	1.59	(0.94	2.67)	0.079
Least deprived area (KS2: n = 378, carers=64) (KS4: n = 663, carers=96)								
Number absent days	IRR	95 %CI		p-value	IRR	95 %CI		p-value
Total absences	1.23	(1.12	1.34)	<0.001	1.26	(1.19	1.32)	<0.001
Authorized absences	1.19	(1.03	1.37)	0.015	1.08	(1.00	1.17)	0.048
Unauthorized absences	1.82	(1.45	2.28)	<0.001	1.87	(1.71	2.07)	<0.001
Persistent absentee								
Missed 10 %+ sessions	OR	95 %CI		p-value	OR	95 %CI		p-value
Non-carer	Ref				Ref			
Carer	1.94	(0.83	4.53)	0.126	1.29	(0.80	2.07)	0.294
Missed 7 %+ sessions								
Non-carer	Ref				Ref			
Carer	2.04	(1.07	3.92)	0.031	1.44	(0.94	2.18)	0.087

Weighted values from complete data.
KS2 Pooled data 2011–2017 (N = 1597).
KS4 Pooled data 2009–2016 (N = 2557).
Number absent day: Poisson regression.
Persistent absentee - missed sessions: Logistic regression.

Table E3
KS2 Stratified analysis. Logistic regression testing association between caring status and absences by ethnic background.

IMD quintiles	Key Stage 2 (N = 1597)			
	Model 1 Adjusted by Academic year			
White (KS2: n = 1223, carers=156)				
Number absent days	IRR	95 %CI		p-value
Total absences	1.20	(1.13	1.27)	<0.001
Authorized absences	1.16	(1.06	1.26)	0.001
Unauthorized absences	2.14	(1.75	2.61)	<0.001
Persistent absentee				
Missed 10 %+ sessions	OR	95 %CI		p-value

Table E3 (*continued*)

IMD quintiles	Key Stage 2 (*N* = 1597)			
	Model 1 Adjusted by Academic year			
White (KS2: *n* = 1223, carers=156)				
Non-carer	Ref			
Carer	1.47	(0.73	2.94)	0.273
Missed 7 %+ sessions				
Non-carer	Ref			
Carer	1.41	(0.87	2.29)	0.159
Black (KS2: *n* = 94, carers=16)				
Number absent days	IRR	95 %CI		p-value
Total absences	1.69	(1.41	2.02)	<0.001
Authorized absences	1.06	(0.76	1.46)	0.733
Unauthorized absences	0.28	(0.07	1.21)	0.089
Persistent absentee				
Missed 10 %+ sessions	OR	95 %CI		p-value
Non-carer	Ref			
Carer	10.5	(1.39	78.3)	0.022
Missed 7 %+ sessions				
Non-carer	Ref			
Carer	3.40	(0.68	16.9)	0.135
Pakistani/Bangladeshi/Indian (KS2: *n* = 200, carers=25)				
Number absent days	IRR	95 %CI		p-value
Total absences	1.32	(1.15	1.51)	<0.001
Authorized absences	0.96	(0.76	1.21)	0.711
Unauthorized absences	2.33	(1.59	3.41)	<0.001
Persistent absentee				
Missed 10 %+ sessions	OR	95 %CI		p-value
Non-carer	Ref			
Carer	3.28	(1.00	10.7)	0.049
Missed 7 %+ sessions				
Non-carer	Ref			
Carer	2.91	(1.13	7.50)	0.028
Other (KS2: *n* = 80, carers=15)				
Number absent days	IRR	95 %CI		p-value
Total absences	2.15	(1.80	2.58)	0.001
Authorized absences	3.14	(2.22	4.44)	<0.001
Unauthorized absences	6.62	(3.23	13.6)	<0.001
Persistent absentee				
Missed 10 %+ sessions	OR	95 %CI		p-value
Non-carer	Ref			
Carer	omitted			
Missed 7 %+ sessions				
Non-carer	Ref			
Carer	13.60	(2.88	64.4)	0.001

Weighted values from complete data.

KS2 Pooled data 2011–2017 (*N* = 1597).

Number absent day: Poisson regression.

Persistent absentee - missed sessions: Logistic regression.

Appendix F. – Association between school absences at KS2 and KS4 by young carer characteristics: care recipient and care intensity

Table F1

Descriptive of young carers characteristics.Absences analysis sample Weighted and unweighted data (%).

	Key stage 2 (*n* = 212)		Key Stage 4 (*n* = 280)	
	Un-wt %	Wt %	Un-wt %	Wt %
Care Intensity				
1–9 hrs. per week			75.7	75.2
10+ hrs. per week			24.3	24.8
Recipient of care				

(continued on next page)

Table F1 (*continued*)

	Key stage 2 (n = 212)		Key Stage 4 (n = 280)	
	Un-wt %	Wt %	Un-wt %	Wt %
Other	46.0	50.0	40.3	39.6
Parent	54.0	50.0	59.7	60.4

Unweighted and Weighted values of imputed data.
KS2-Pooled data from 2011 to 2018 (n = 212).
KS4-Pooled data from 2009 to 2013 (n = 280).
Imputation conducted only among young carers.
Abbreviations: Un-wt: Un-weighted values of imputed data, Wt: Weighted values of imputed data.

Table F2
KS2 - Logistic and Poisson regression testing association between care recipient and number of absent days and persistent absence (n = 212).Care recipient: Other/Parent. Reference group: Other.

Model 1 Adjusted by Academic year				
Number absent days	IRR	95 %CI		p-value
Total absences	0.83	(0.52	1.32)	0.314
Authorized absences	0.73	(0.31	1.67)	0.314
Unauthorized absences	1.01	(0.13	7.53)	0.985
Persistent absentee	OR	95 %CI		p-value
Missed 10 %+ sessions				
Other	Ref			
Parent	0.37	(0.00	63.9)	0.308
Missed 7 %+ sessions				
Other	Ref			
Parent	0.64	(0.17	2.45)	0.355

Weighted values of Imputed data.
Pooled data 2011–2018. Only carers.

Table F3
KS4 - Logistic and Poisson regression testing association between care recipient/care intensity and number of absent days and persistent absence (n = 280).Care recipient: Other/Parent. Reference group: Other.Care intensity: 1–9 hrs x w/ 10+ hrs x w. Reference group: 1–9 hrs x w.

Model 1 Adjusted by Academic year				
Care Recipient				
Number absent days	IRR	95 %CI		p-value
Total absences	1.25	(0.94	1.65)	0.097
Authorized absences	1.02	(0.63	1.63)	0.924
Unauthorized absences	2.21	(1.43	3.43)	0.005
Persistent absentee	OR	95 %CI		p-value
Missed 10 %+ sessions				
Other	Ref			
Parent	1.20	(0.55	2.60)	0.572
Missed 7 %+ sessions				
Other	Ref			
Parent	1.29	(0.47	3.53)	0.550
Care Intensity				
Number absent days	IRR	95 %CI		p-value
Total absences	1.19	(0.76	1.87)	0.368
Authorized absences	1.20	(0.90	1.61)	0.191
Unauthorized absences	0.92	(0.05	18.0)	0.878
Persistent absentee	OR	95 %CI		p-value
Missed 10 %+ sessions				
1–9 hrs per week	Ref			
10+ hrs per week	1.71	(0.75	3.88)	0.179
Missed 7 %+ sessions				
1–9 hrs per week	Ref			
10+ hrs per week	1.62	(0.66	3.99)	0.265

Weighted values of Imputed data.
Pooled data 2011–2018. Only carers.

Appendix G-. KS2 - The NPD-linked dataset over represents pupils performing above the expected standard across all outcomes. National rates report approx. 81 % of pupils performing meet the expected standard at KS2 in all three subjects, compared to 84 % in the NPD data and around 88 % in the weighted analysis sample. A possible explanation to this overrepresentation may be due to a tendency for individuals in better conditions to have higher response rates in surveys

Table G1

Table G1

Educational attainment distribution. Pooled data from 2011 to 2018 before exclusion/inclusion and KS2 analysis sample.

	All ages 2011–2018		Analysis sample - weighted
n	3379		1740
	Un-wt %	Wt %	Wt %
Performance Reading			
Below expected standard	15.0	13.4	11.4
Above expected standard	85.0	86.6	88.6
Performance Math			
Below expected standard	16.0	14.7	12.1
Above expected standard	84.0	85.3	87.9
Performance Writing			
Below expected standard	17.5	17.1	13.6
Above expected standard	82.5	82.9	86.4

Un-weighted and Weighted percentages of complete case data.

Abbreviations: Wt: weight, Un-wt: Un-weighted.

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