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Associations between young informal caring and mental health: a prospective observational study using augmented inverse probability weighting

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ABSTRACT

Background: Across the world, many young people are supplying unpaid, informal care. There is growing evidence of the impact of this caring role on the lives of young informal carers, however there has been little quantitative analysis of the mental health impacts. This research aimed to estimate the effect of informal caring at age 14/15 years on mental health at age 18/19 years.

Method: Data was drawn from Waves 5, 6, 8 (2012–2018) of the Longitudinal Study of Australian Children. Effects of caring on mental health were assessed using augmented inverse probability weighting, with adjustment for potential confounders, and using the Kessler-10 measure of mental health. Caring was assessed with both a binary (any caring vs none), and a three category variable (no caring, less than daily caring, daily caring). Multiple imputation was carried out using chained equations, and analysis was conducted on both complete case ($n=2165$) and the imputed dataset ($n=3341$).

Outcomes: In complete case models, any caring at age 14/15 years was associated with poorer mental health at age 18/19 years compared to those reporting no caring, with an average treatment effect (ATE) of 1.10 (95%CI 0.37, 1.83). The ATE of daily caring compared to no caring at age 14/15 years of age was 1.94 (95%CI 0.48, 3.39), and caring less than daily (compared to no caring) was associated with a treatment effect of 0.83(95%CI 0.06, 1.61). Associations were robust to several sensitivity analyses.

Interpretation: These results suggest there is a mental health impact of caring in adolescence on mental health four years later. This highlights the need for support for young informal carers, particularly for those providing more intensive caring.

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Introduction

Globally, unpaid care work accounts for the majority of all care needs.¹ Informal carers provided an estimated 1.9 billion hours of care in 2015 in Australia, with an estimated replacement cost of \$60.3 billion dollars (3.8% GDP).² A substantial number of unpaid, informal carers are young people. Young carers are commonly defined as young people and children who provide informal (unpaid) care and support to someone else, typically a family member, with a disability, a physical or mental illness, a substance dependency, or who is elderly.³ This caring is carried out on a regular basis, and

is accompanied by a level of responsibility more commonly associated with adulthood.⁴ This definition distinguishes young carers from the broader population of young people who do, and indeed are normatively expected to, contribute to usual household tasks.

Notwithstanding a widespread lack of recognition for young carers, a sizeable proportion of young people worldwide carry out unpaid informal caring work.⁵ Estimates vary substantially, but the 2015 Survey of Disability, Ageing and Caring (SDAC) estimated that 213,100 (about 7%) of young people in Australia aged 15–24 years provided informal care to someone needing assistance due to either a disability or old age⁶ and a further 59,100 young people aged under 15 years of age were informal carers.⁶

Caring can impose significant impacts on those who care. A rich body of qualitative work has documented the stigma,^{7,8} and

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social isolation,^{7,9,10} experienced by young carers, as well as the restricted educational and leisure opportunities.^{8,10} Among adults, it is known that informal caring can exert costs on both physical and mental health.^{11,12} While overall little is known about the health effects of caring on young carers, emerging evidence indicates that young carers experience poorer mental health. A study among 295 young carers aged 14-25 years in the UK reported that 45% of participants perceived that they had a mental health problem.¹³ A Canadian study comparing 124 young carers and 124 non-carers found evidence of reduced self-esteem and a higher incidence of depressive symptoms among young carers,¹⁴ and a large school survey among 11,215 pupils of city schools in Glasgow, Scotland found more psychosocial problems among young carers relative to those who did not provide unpaid care.¹⁵ Cross-sectional studies do not provide the temporal information needed to establish whether caring precedes poor mental health or vice versa. To establish evidence of a causal relationship between young caring and health, more prospective or longitudinal studies are needed. In Northern Ireland, a census-based record linkage study that included 433,328 young people aged 5-24 years, found evidence that young carers were more likely to report chronic poor mental health, and were at increased mortality risk relative to their non-caregiving peers.¹⁶ In England, young people aged 16-25 years who were providing care were found to have poorer mental health one year later compared to non-carers.¹⁷ Overall however, there has been little work done to quantitatively examine the mental health impact of caring on young people and this lack of quantitative work among young carers using large samples has been recognised in a recent review.¹⁸ Furthermore, most studies of mental health among young carers have used single or two item measures of mental health, and only a minority have used validated measures. In addition to this, there is a lack of quantitative research of young informal carers in Australia.

The dearth of comparative studies examining and quantifying health differences between young carers and non-caregiving peers limits understanding of the effects of young caring, and may ultimately mean that young carers are not getting the assistance they need. This study aimed to address this gap by drawing on a large representative study of Australian children with the specific aim to examine the effect of being an informal carer at age 14/15 years on later mental health (assessed using a validated measure of mental health at age 18/19 years). To do this, we computed the average treatment effect (ATE) of caring as an adolescent, on mental health outcomes four years later.

Methods

A prospective analysis of secondary data from the Longitudinal Study of Australian Children (LSAC) was conducted. We report this study in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement for the reporting of observational studies.¹⁹

Cohort and study design

LSAC is a nationally representative longitudinal cohort study of Australian children and their families. It commenced in 2004 among two cohorts: children aged 4/5 years at baseline (Cohort K) and children aged 0/1 year at baseline (Cohort B). The sampling frame was the Medicare Australia database which has near complete coverage of Australian residents (98% of Australian children).²⁰ Sampling was conducted according to a two stage clustered design.²⁰ First, 311 postcodes were selected after stratifying to ensure proportional representation of states and territories, and metropolitan versus rest of state areas. Children aged 0/1 year or

4/5 years residing in these postcodes were then randomly selected from the Medicare Australia database.

Data on a range of domains including demographic details; relationships; education; behaviour; development; and social, health, housing and financial characteristics has been collected every two years from study children, as well as other study informants including parents/carers and teachers. Wave 1 achieved a response rate of 50.4% (Cohort K),²⁰ and there has been strong retention for subsequent waves. In this analysis, data was drawn from Cohort K, using covariates collected in Wave 5 (2012, age 12/13 years), caring in Wave 6 (2014, age 14/15 years) and mental health in Wave 8 (2018, age 18/19 years).

LSAC has been granted ethics approval by the Australian Institute of Family Studies Ethics Committee, which is a Human Research Ethics Committee registered with the National Health and Medical Research Council (NHMRC).

Exposure variable: Informal caring

We derived two variables to define caregiver status, based on responses to questions about caring in Wave 6 (14/15 years). For our main analysis we created a binary variable on the basis of responses by the study child to the question: "Do you help someone who has a long-term health condition, has a disability or is elderly with activities that they would have trouble doing on their own?" (yes, no). Respondents were instructed to think about help they have given, or are likely to give, for at least six months. They were also asked not to include help that is provided as part of a paid job, unpaid volunteer work or community service.

Given that the effect of caring may vary according to the frequency and amount of time spent caring, we also created a variable that assessed caring frequency. Respondents were asked "How often do you do these caring activities?", with valid response options "everyday", "about once a week", "once a fortnight", "once a month" and "less than once a month". We derived a categorical variable: no caring, less than daily caring, daily caring.

Outcome variable: Mental health

Psychological distress was assessed using the self-report Kessler Psychological Distress Scale (K10).²¹ Respondents (study child) at Wave 8 (18/19 years) answered 10 questions about their experiences of depression and anxiety in the past 4 weeks (e.g. "In the past 4 weeks, about how often did you feel so nervous nothing could calm you down?"). Five response options ranged from "all of the time" to "none of the time". Responses for the ten items were combined to form an overall continuous score ranging from 10 to 50, with higher scores indicating poorer mental health. The K10 has been shown to be a valid measure of psychological distress, and corresponds well with other measures of non-specific psychological distress such as the GHQ and SF-12.²²

Confounding factors

Fig. S1a and S1b (in Supplementary material) detail our assumed causal relationships for this study, noting the waves in which variables were measured. Confounding variables are assumed to precede our exposure (caring) and outcome (mental health) and confound the *Caring* → *Mental health* relationship of interest. Data on covariates identified as potential confounding factors were collected in Wave 5, and were: gender (male, female); household type (single parent; two parent household); household income (quintiled); parental disability (no parent with a disability, one or more parents in household with disability or health condition, including mental health); parental country of birth/cultural identity (both parents born in Australia, one or more parents born

in an English speaking country outside Australia, one or more parents born in a non-English speaking country, one or more parent identifies as Indigenous); maternal educational attainment (did not complete Year 12, Year 12, certificate/trade, diploma, bachelor degree or higher); number of siblings in household (continuous); area level disadvantage (deciled). The presence of children under 5 years in household (yes, no) collected in Wave 6 was also identified as a potential confounder. While other covariates were collected in Wave 5, we judged it more plausible that the presence of children under 5 years of age collected in Wave 6 (rather than Wave 5), would capture siblings or other household members born between Wave 5 and Wave 6 that would have a more deterministic relationship on caring in Wave 6. These covariates were reported by the primary household respondent, typically the mother of the study child.

Mental health in Wave 5 was included in sensitivity models (delineated below) and measured using parent-reported Strengths and Difficulties Questionnaire (SDQ) scores. Mental health for study children/adolescents in Waves 1-7 of LSAC Cohort K was collected using the SDQ, a measure that demonstrates good validity and strong correlations with other measures of child and adolescent psychopathology.²³ The overall "Total difficulties" score (as reported by parent 1, who in most cases was the child's mother) is a derived score from four subscales.²³ It is represented by a continuous score ranging from 0-40, with higher scores indicating poorer mental health.

The role of parental employment in the relationship between adolescent caregiving and later mental health is unclear. We considered that parental employment could be a confounder of this relationship, in which case adjustment in models is necessary to reduce bias due to confounding. However parental employment could also plausibly be a mediator of this relationship (if an adolescent's caring role enabled one or more parents to sustain paid employment). Given this unclear relationship, and the potential bias in estimates if paid parental employment is included as a confounder when it is in fact a mediator, we included paid parental employment (no parent employed, one parent employed, two parents employed) in sensitivity analysis only.

Missing data

Our eligible sample was defined as those attending Waves 6 with complete caring data, of which there were 3341 respondents (see Fig. 1). Missing data on mental health (n=902) was principally related to loss to follow-up (non-attendance at Wave 8, n=588). A further 274 respondents had missing data on covariates, resulting in n=2165 respondents with complete data on informal caring, mental health and all covariates.

Main analysis was carried out on the complete dataset, however we also conducted analysis on an imputed dataset. To obtain the imputed dataset, we carried out multiple imputation (MI) using chained equations with 100 imputations. All covariates and the mental health variable were included in the imputation model, as well as the following ancillary variables, collected in Wave 1: number of older siblings, presence of two parents in household, area remoteness, birth plurality, relationship of parents to child.

Statistical analysis

In descriptive analysis, characteristics of the sample with complete data were described by informal caring status. We also calculated mean mental health scores for carers and non-carers at Wave 5 and follow-up (Wave 8).

The average treatment effect (ATE) of being a young carer ("treatment") on mental health was then estimated using augmented inverse probability weighting (AIPW).²⁴ We then estimated

the potential outcome means (POMs) for each treatment group (carers vs non-carers). All analyses were conducted in Stata/SE version 16, using the *teffects* command (see StataCorp LLC manual for full details of the estimation procedure).²⁵

The AIPW estimator produces a marginal, rather than a conditional estimate of the treatment effect. A doubly robust procedure, AIPW minimises bias if either the treatment or the outcome model is correctly specified.²⁴ Analysis weighted by AIPW produces a pseudo-population where the relationship between the confounders and the exposure is blocked. This means that carers and non-carers are comparable within this pseudo-population (see causal diagram, Figure S1b in Supplementary material). An individual's weight depends on their values of treatment (caring, A) and confounders (C). In this paper, a carer receives the weight $1 / \Pr[A = 1|C]$, and a non-carer receives the weight $1 / \Pr[A = 0 | C]$.²⁶ The Stata procedure obtains these weights by fitting a logistic regression model for caring (binary outcome), with the confounders specified above as predictors. This means we can interpret the estimated effect of our exposure (informal caring) on the outcome as though all adolescents in the sample appear as unexposed (non-carers) and exposed (young carer), and optimises causal inference.

In the analyses carried out here, both the outcome and the treatment models adjusted for all of the listed covariates except for Wave 5 mental health, which was included in outcome models for sensitivity analyses only. Analysis was conducted on both complete case (n=2165, reported as main analysis) and the imputed dataset (n=3341, reported in Supplementary Table 1 & 2). We estimated the effect of caring using the binary caring variable, as well as the three category caring variable (no caring, caring less than daily, daily caring).

Sensitivity analysis

Baseline adjustment of outcomes is a key analytic consideration in epidemiology; while it can address some biases, it can also introduce other biases that may exceed those that it eliminates.²⁷ Although our main models did not adjust for prior mental health, we carried out sensitivity analysis in which models adjusted for mental health at age 12/13 years. In separate sensitivity models, we also adjusted for parental employment.

Role of the funding source

The funding source had no role in study design, data collection, data analysis, interpretation or writing of the paper.

RESULTS

Fig. 1 presents the eligible and analytical samples. The complete case analysis (main analysis) was comprised of 2165 participants with complete caring, mental health and covariate data, and the imputed sample comprised 3341 respondents.

Sample descriptive statistics (Table 1) were calculated according to the main caring variable. A slightly higher proportion of males than females provided any caring. The majority of carers and non-carers were living in two parent households. In terms of highest levels of maternal education, certificate/trade and a bachelor degree or higher were the most common for both groups. For the majority of the sample, both parents were born in Australia, and cultural background and identity did not differ between carers and non-carers. Level of area disadvantage and household income quintile did not differ between carers and non-carers. A higher proportion of those who were carers at the age of 14/15 years of age were living with at least one parent with a disability at the age of 12/13 years of age (22.9% compared to 16.4%). Just under half of

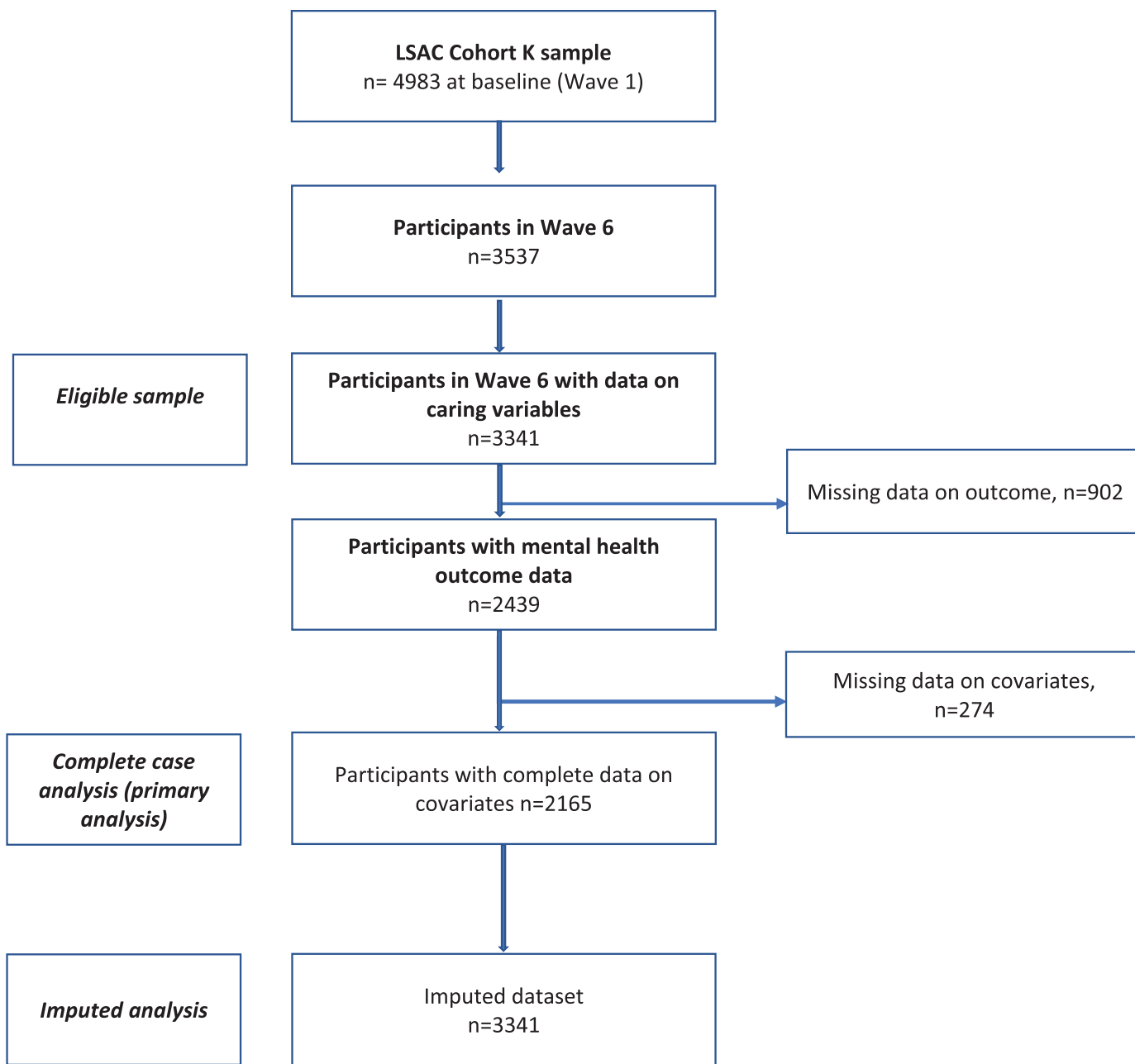


Fig. 1. Selection of eligible and analytic samples

the sample (carers and non-carers) had one other sibling living in the house. The mental health at age 12/13 years and 18/19 years of those providing informal care was poorer than that of same age, non-caring peers.

Table 2 presents the caring characteristics of the sample. The majority of the sample reported no caring at Wave 6, while just over one third of the sample (36.9%), reported “any caring” (helping someone with a long-term health condition, disability or who is elderly with activities that they would have trouble doing on their own). A minority of the sample (7.1%) provided some care daily, and almost one third (29.8%) provided some caring that was less frequently than daily.

Table 3 presents the marginal potential outcome means (POMs) and ATE (average treatment effects) on mental health for each caring variable for carers and non-carers. As described in the meth-

ods, under this approach the means are calculated once as if the whole population is exposed and once as if they are not.

Results indicate that any caring at age 14/15 years was associated with poorer mental health at age 18/19 years relative to same-age peers reporting no caring ATE= 1.10 (95%CI 0.37, 1.83) for complete case models. Baseline adjustment for mental health led to some attenuation of the effect of caring, however adjustment for parental employment did not substantively change estimates.

The ATE of daily caring compared to no caring at age 14/15 years of age (see Table 4) was 1.94(95%CI 0.48, 3.39) in complete case models, with consistent estimates observed in models adjusting for mental health at age 12/13 years and parental paid employment. There was also an effect (albeit reduced) of caring less frequently than daily (ATE= 0.83, 95%CI 0.06, 1.61). Adjustment for parental education did not change estimates, but adjustment for prior mental health led to some reduction in estimates.

Table 1
Survey weighted sample characteristics* (n=2165) using the Longitudinal Study of Australian Children**

		% (95%CI)	
		Non-Carers (n=1405)	Carers (n=760)
Gender	Male	48.4(45.6, 51.3)	54.4(50.4, 58.3)
	Female	51.6(48.7, 54.4)	45.6(41.7, 49.6)
Parents in household	Two parents	86.5(83.9, 88.6)	83.2(79.4, 86.3)
	Single parent	13.5(11.4, 16.1)	16.9(13.7, 20.6)
Maternal educational attainment	Did not complete Year 12	14.4(12.2, 16.8)	16.7(13.4, 20.7)
	Year 12	7.3(6.0, 8.8)	7.9(6.3, 10.0)
	Certificate/trade	32.7(29.6, 35.9)	35.2(30.7, 40.0)
	Diploma	10.6(8.9, 12.5)	10.7(8.5, 13.4)
Cultural background	Bachelor degree or higher	35.0(32.2, 38.0)	29.3(25.5, 33.4)
	Both parents born in Australia	65.6(62.4, 68.7)	64.8(60.1, 68.9)
	1+ parent born in English-speaking country outside Australia	15(12.9, 17.4)	14.9(12.3, 17.9)
Area disadvantage (decile)	1+ parents born in non-English speaking country	17.1(14.5, 20.1)	17.1(13.9, 20.9)
	1+ parent identifies as Indigenous	2.2(1.4, 3.7)	3.2(1.8, 5.6)
	1 – most disadvantaged	8.1(6.0, 11.0)	8.0(5.3, 11.9)
	2	8.7(6.3, 12.1)	10.9(7.7, 15.1)
	3	7.3(5.7, 9.4)	10.4(7.6, 14.0)
	4	10.4(8.1, 13.3)	7.4(5.1, 10.6)
	5	10.2(7.8, 13.3)	10.8(7.8, 14.9)
	6	9.6(7.5, 12.3)	10.8(8.0, 14.7)
	7	10.8(8.2, 14.0)	8.9(6.1, 12.6)
	8	10.1(7.9, 12.8)	8(5.8, 10.9)
Household income (quintile)	9	13.0(10.4, 16.2)	14.6(11.5, 18.4)
	10 – least disadvantaged	11.6(8.8, 15.1)	10.2(7.4, 13.9)
	1 - lowest	5.7(4.2, 7.7)	8.3(6.1, 11.3)
	2	11.0(9.2, 13.2)	12.6(10.0, 15.7)
	3	24.9(22.3, 27.6)	23.7(20.3, 27.3)
	4	28.9(26.2, 31.8)	28.6(25.3, 32.2)
Presence of parent with disability in household	5- highest	29.5(26.9, 32.3)	26.8(23.3, 30.6)
	None	83.6(81.2, 85.7)	77.1(73.7, 80.1)
Number of siblings in household	1 or more	16.4(14.3, 18.8)	22.9(19.9, 26.3)
	0	10.5(8.9, 12.4)	12.4(9.9, 15.6)
	1	48.5(45.7, 51.4)	43.7(39.5, 48.0)
	2	27.7(25.2, 30.3)	28.8(25.3, 32.6)
	3	8.9(7.4, 10.6)	9.0(6.9, 11.6)
Children aged <5 years in household (Wave 6)	4+	4.4(3.2, 6.2)	6.1(4.0, 9.2)
	No	94.5(92.7, 95.9)	93.4(90.8, 95.3)
Parental employment	Yes	5.5(4.1, 7.3)	6.6(4.7, 9.2)
	No parent in household employed	4.5(3.2, 6.3)	8.1(5.9, 11.2)
	One parent in household employed	27.0(24.2, 29.9)	29.6(25.8, 33.8)
	Two parents in household employed	68.5(65.4, 71.4)	62.2(57.6, 66.6)
		Mean (95%CI)	Mean (95%CI)
Mental health (Wave 5, SDQ Total Difficulties)		7.0(6.7, 7.3)	8.1(7.7, 8.6)
Mental health (Wave 8, Kessler-10)		19.2(18.7, 19.6)	20.5(19.7, 21.2)

*Sample size and number within strata of caring status are absolute numbers, and figures in table relate to survey weighted proportions (and their confidence intervals).

**Covariates were measured in Wave 5 (with the exception of Wave 6 children <5 years and Wave 8 mental health) and reported according to Wave 6 caring status

Table 2
Survey weighted caring characteristics of sample* (n=2165) at Wave 6 (2014, 14/15 years) using the Longitudinal Study of Australian Children

Caring variable	% (95%CI)
Any caring	No 63.1(60.7, 65.4)
	Yes 36.9(34.6, 39.3)
Daily caring-3 category	No caring 63.1(60.7, 65.4)
	Less than daily 29.8(27.6, 32.1)
	Daily caring 7.1(6.0, 8.5)

*Figures in table relate to survey weighted proportions (and their confidence intervals).

Results derived from the imputed dataset did not substantially differ from those obtained from complete case models, and are shown in Supplementary Table S1 (binary caring) and Table S2 (3-category caring variable).

DISCUSSION

These results indicate that unpaid informal caring among young people is associated with adverse mental health. Young people who carried out any caring at the age of 14/15 years had poorer mental health compared to those with no caring role. The results

Table 3

Effect of caring (binary variable, 2014, 14/15 years) on mental health (2018, 18/19 years): marginal potential outcome means and average treatment effects in complete case models (n=2165) using the Longitudinal Study of Australian Children

Complete case analysis	Potential outcome means		ATE
	No caring	Any caring	
Model a	19.0	20.1	1.10 (0.37, 1.83)
Model b	19.1	20.0	0.92(0.20, 1.63)
Model c	19.1	20.1	1.08(0.35, 1.81)

Model a: adjusted for gender, parents in household, area disadvantage, household income, presence of parent with disability, number of siblings in household, presence of children aged under 5 years of age in household, parental country of birth/cultural identity, maternal education

Model b: Model a + mental health aged 12/13 years

Model c: Model a + parental paid employment

of this analysis are also suggestive of a dose-response relationship between caring and mental health, with largest effects observed for those providing daily caring. These results were consistent across both imputed and complete case analysis. Results were also robust across sensitivity models adjusting for baseline mental health and parental employment. The fact that the mental health impact was observed four years after the measurement of caring points to sustained effects of caring on mental health.

Strengths and limitations

We note some important strengths and limitations of this analysis. With respect to limitations, both caring activities and mental health were self-reported, and may therefore be subject to self-reporting bias. The caring encapsulated by these measures is likely to range substantially in terms of quantity, duration and intensity, as well as in terms of persons being cared for, and tasks involved. It is likely that the effects of caring vary according to many of these dimensions. The measures of caring here do not distinguish between these factors.

As a further point, we note that the prevalence of caring in this dataset (36.9% providing any caring) is substantially higher than other estimates of young carers in Australia. This may be related to definitional differences, as well as differences in survey methods and administration.²⁸ For example, in the Survey of Disability, Ageing and Caring (SDAC) respondents were asked whether they provided care (help or supervision) for specific activities, while the LSAC caring variable did not prescribe particular activities for this caring variable. This may have led respondents to be more inclusive in terms of the types of activities included as caring, leading to the conflation of regular chores with more intensive caring). Assuming the true effect of caring leads to poorer mental health, including participants whose caring is not intensive enough to match standard definitions will potentially lead to non-differential misclassification of caring and bias the effect of caring toward the null. We note however, that the proportion of respondents report-

ing daily caring (as opposed to ‘any’ caring) in this analysis (7%) is aligned with the estimated prevalence of young carers in industrialised countries (estimated to be 2-8%²⁹). It also matches the estimated prevalence of young carers in Australia using SDAC (7%).⁶ Measurement and classification of caring is a widely recognized issue, and underscores the need for an agreed definition of young carers in terms of roles and responsibilities, as well as age.²⁹

Regarding strengths, we used a large representative dataset. This contained a wide set of available covariates from which we chose those that could most plausibly confound the relationship between caring and mental health. We also used strong methods, applying AIPW to maximise causal inference. We carried out different sets of sensitivity analyses, testing the impact of different confounders and while there was some attenuation of associations with adjustment for prior mental health, we found our results robust across these analyses. Our methods and the dataset used enabled us to define our models in terms of the theorised temporal sequencing between caring and mental health, controlling for confounders collected prior to both of these. This approach minimised the risk of bias due to reverse causation. Finally we note that we carried out multiple imputation to derive an imputed analytic sample, upon which we conducted sensitivity analyses. Results of models conducted on complete case and the imputed dataset did not substantially differ, indicating low risk of bias due to missing data.

Results in context

This is the first study that we are aware of to quantitatively examine associations between being a young informal carer and mental health in Australia, and to our knowledge, the first study to examine associations prospectively using longitudinal data. The results are consistent with other international studies that have demonstrated mental health penalties associated with being a young carer.¹³⁻¹⁶ While these associations are unlikely to be clinically meaningful at the individual level, they may translate into important shifts in the distribution of mental health within the population of young carers.³⁰ The results indicate that young carers are a population at risk of experiencing poorer mental health, and support is needed to reduce mental health inequalities in this group due to their caring responsibilities.

Caring can be physically and emotionally consuming. It can also be time-intensive, diverting time and energy from school and work, social activities, and sport and leisure.^{13,28} Young carers are often providing informal and unpaid care with little recognition, visibility or support (either formal or informal).³¹ Many young carers also report being in a constant state of readiness for unexpected events.³² The demands of caring can be highly stressful, potentially underpinning the poorer mental health observed in this analysis.

Importantly too, young carers cannot be viewed in isolation of the social and normative context in which they are embedded. There are clear social norms regarding caring, and evidence sug-

Table 4

Effect of caring (3-category caring variable, 2014) on mental health (2018): marginal potential outcome means and average treatment effects (n=2165) using the Longitudinal Study of Australian Children

Complete case analysis	Potential outcome means		ATE	Potential outcome means		ATE
	No caring	Caring less than daily		No caring	Caring daily	
Model a	19.0	19.9	0.83(0.06, 1.61)	19.0	21.0	1.94(0.48, 3.39)
Model b	19.1	19.8	0.68(-0.08, 1.45)	19.1	20.7	1.64(0.22, 3.06)
Model c	19.1	19.9	0.83(0.05, 1.61)	19.1	20.9	1.81(0.33, 3.28)

Model a: adjusted for gender, parents in household, area disadvantage, household income, presence of parent with disability, number of siblings in household, presence of children aged under 5 years of age in household, parental country of birth/cultural identity, maternal education

Model b: Model a + mental health aged 12/13 years

Model c: Model a + parental paid employment

gests that this also contributes to their under-recognition and lack of support.³³ Caring is an adult role: adults who adopt caring roles are conforming to social norms regarding the protection and care of the vulnerable. Young people who provide informal care contravene normative constructions of childhood and adolescence, transgressing social norms by precociously adopting adult roles.^{33,34} Further, their early adoption of these roles occurs within a broader social context that affords other young people an extended adolescence. It is recognised that in many countries, the life phase of adolescence – the period between childhood and adulthood – is longer now than ever before.³⁵ This, therefore, marks young carers as further dissonant from other young adults within Western society who are adopting adult roles later than previous generations.

Implications of this work and further research

The stakes are high for young carers: what happens during this formative life period has implications for their future health and economic wellbeing. The period of adolescence and early adulthood is known to be a critical time of change: biologically, socially, and psychologically. It is in this period that the foundations and patterns for many future outcomes and behaviours are set.³⁶ However, despite the mental health costs of caring experienced by many young carers, it is important to also acknowledge that many young carers report significant positive aspects of caring including independence and responsibility; a sense of self-worth and achievement; maturity;²⁸ and strong family relationships.^{28,37} Support and interventions must balance these different tensions with the need to support young carers to mitigate or prevent sustained impacts of their caring. Recent research in the UK has highlighted the need to integrate services so that schools, health and social services, and family can work to support young carers in a unified and cooperative way.³¹ Central to this is the need to acknowledge young carers, as well as the need to measure informal caring - this should be a focus of future research. We also note that given that results indicated that more frequent caring (daily) is associated with larger effects on mental health, efforts to support young informal carers should focus on reducing pressure among those providing more frequent care.

Relatedly, further research is needed to disentangle the effect of different types and levels of care intensity. Primary carers, those providing the majority of assistance, are likely to bear the greatest burden of health impacts of caring, however more research is needed to assess this. It is also possible that the immediate mental health impact of caring may be even greater than that observed here, and future research should investigate both immediate and lagged effects of caring. As a final point, different levels of social assistance and varying social norms across different countries may induce differing effects of caring on health, emphasising the need to evaluate associations in particular countries and policy contexts.

CONCLUSIONS

Using robust and rigorous quantitative methods, this research demonstrates the mental health impacts of being a young carer, with evidence that associations are greater for those providing daily caring. This highlights the need for support and services for young carers to minimise the potential impacts of caring on mental health. Further research is also needed to first, improve identification and measurement of young carers, and second, to build understanding of the way different types and levels of caring may differentially affect mental health.

Research in context

Evidence before this study

Informal, unpaid caring can have significant impacts on those who deliver such care. Among young people, caring can exert effects on participation in education, as well as social and recreational engagement. Studies have shown that informal caring is associated with poorer health outcomes among adults, however evidence of the health effects of caring on young informal carers is limited.

Added value of this study

This is one of the first studies to prospectively examine associations between being a young informal carer and mental health outcomes. We use causally robust methods to assess this relationship, and demonstrate an adverse association between providing informal, unpaid care at the age of 14/15 years and mental health at age 18/19 years.

Implications of all the available evidence

This study highlights the need to support young informal carers to mitigate potential impacts of caring on mental health. The need for support is particularly pertinent to those delivering frequent care, among whom the impact on mental health is greatest.

CONTRIBUTORS

TK acquired the funding, carried out the analysis, and wrote the paper. All authors contributed to analytical design, interpretation of findings, review and revision of drafts.

DECLARATION OF INTERESTS

The authors declare no conflicts of interest.

DATA SHARING STATEMENT

The data that support the findings of this study are available from Dataverse, managed by the Australian Data Archive. Restrictions apply to the availability of these data, and interested users may apply for data from <https://dataverse.ada.edu.au/dataset.xhtml?persistentId=doi:10.26193/VTCZFF>.

Declaration of Competing Interest

The authors declare no conflict of interest.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.lanwpc.2021.100257](https://doi.org/10.1016/j.lanwpc.2021.100257).

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