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Studying informal care during the pandemic: mental health, gender and job status

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ABSTRACT

Unexpected negative health shocks such as COVID-19 put pressure on households to provide more care to relatives and friends. This study uses data from the UK Household Longitudinal Study to investigate the impact of informal caregiving on mental health during the COVID-19 pandemic. Using a difference-in-differences analysis, we find that individuals who started providing care after the pandemic began reported more mental health issues than those who never provided care. Additionally, the gender gap in mental health widened during the pandemic, with women more likely to report mental health issues. We also find that those who began providing care during the pandemic reduced their work hours compared to those who never provided care. Our results suggest that the COVID-19 pandemic has had a negative impact on the mental health of informal caregivers, particularly for women.

1. Introduction

Social care, which is an essential part of the healthcare system, has been significantly impacted by the COVID-19 pandemic. There are two main types of social care: formal and informal. Formal care involves paid care services provided by healthcare institutions or professional caregivers, while informal care is provided by unpaid individuals such as family members, friends, or volunteers. In the UK, there are currently over 6 million informal caregivers, and this number is expected to increase to 9 million by 2037 (Carers UK, 2010). It is important to recognize and support both types of care as they play a vital role in supporting individuals in need.

During lockdowns, formal care services were limited in order to protect patients and staff from COVID-19. This led to an increase in the hours of informal care as unpaid caregivers, such as family members and friends, provided support to those in need (Giebel et al., 2020; see Fig. 1). Studies have shown that the pandemic has influenced the prevalence and intensity of informal care (Lorenz-Dant, 2020; Carers UK, 2020). It is worth noting that inter-generational contacts were discouraged during the pandemic, making the rise in informal care even more notable". Informal caregivers, who can be family members, friends, or acquaintances, often provide not only practical assistance but also emotional support to those they care for. The mental health and well-being of the caregiver is closely related to that of the care recipient. The demands of caregiving can be stressful and impact the caregiver's quality of life and mental health (Alexander et al., 2020; Panicker and Ramesh, 2019; Patton et al., 2018; Schulz and Sherwood, 2008; Gysels et al., 2012). Additionally, a caregiver's declining mental health can also negatively affect the mental health of the care recipient. The COVID-19 pandemic has had a widespread impact on mental health, including for caregivers and care recipients. Policymakers have warned about the potential short-term and long-term psychological effects of the pandemic (World Health Organization, 2020).

This study uses data from the UK Household Longitudinal Study (UKHLS), also known as Understanding Society (US), from 2017–2021 to examine the relationship between being an informal caregiver and mental health. By analyzing the impact of the COVID-19 pandemic, we are able to compare the changes in the mental health of individuals who began providing care after the pandemic with those who did not provide care at all. This allows us to understand the effects of caregiving on mental health in the context of the pandemic. We consider the

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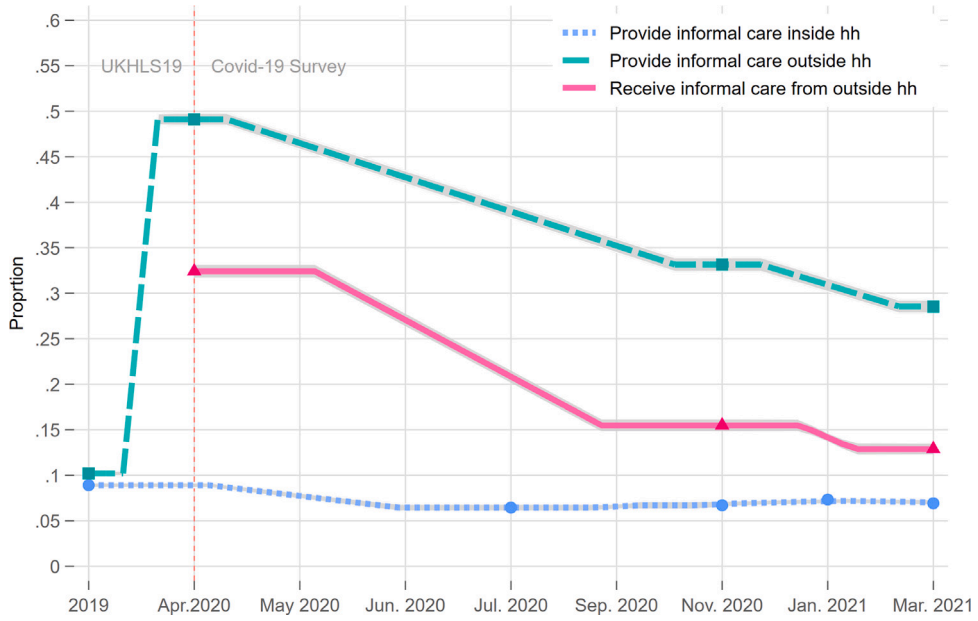


Fig. 1. Proportion of informal carers providing help within and outside their household over time.

informal care outside the household that is the one reported in the survey.

Most of the previous studies on informal caregiving have focused on its effects on labor market outcomes such as hours worked and wages (e.g., Berecki-Gisolf et al., 2008; Bolin et al., 2008). However, the influential work by Ruhm (2000) has highlighted the importance of studying the impact that unexpected events on mental health, as this seems to deteriorate during periods of shocks. Recent studies are mostly based on identifying the difference in the average mental health during the pandemic compared to that of previous years (e.g., Davillas and Jones, 2021). Akay (2022) is the first to offer a strategy to identify the average marginal effects of the daily confirmed Covid-19 cases on mental health outcomes. Adopting a linear fixed-effects model specification, the author reports robust findings that the average mental health in the UK is substantially reduced by the local and global pandemic. Bansak et al. (2022), using a difference-in-differences and dynamic study estimations, applied to CPS data for 2019–2020 show that after the onset of COVID-19 the labor force participation of mothers of school-age children dropped more in states with marital property laws more generous to parental caregivers. Mangiavacchi et al. (2021) using real-time survey data on families with under-16 children collected in April 2020 estimate how the lockdown has affected children's outcomes. Changes in the parental division of household tasks and childcare seem to point to greater involvement of fathers in childcare and homeschooling activities. This is accompanied by an increase in children's emotional well-being and by a reduction in TV and passive screen time.

However, there is limited research on the impact of caregiving on mental health and the quality of care provided during the pandemic. In this study, we use the COVID-19 pandemic as a natural experiment to examine the effect of informal caregiving on mental health. Informal caregivers frequently report mental health issues (Chan et al., 2020; Holmes et al., 2020), and the increased risk of exposure and the number of contacts during the pandemic may have further stressed these "invisible workers" and affected the quality of care they provide. We analyze the mental health of individuals who became caregivers during the pandemic and consider whether less experienced caregivers may have had different reactions to the pandemic than the general population. We also examine gender inequality as women are more likely to provide informal care than men.

Using difference-in-differences analysis, we find that individuals who began providing care after the pandemic have more mental health issues compared to those who never provided care. However, we do not observe any significant differences in mental health between those who started caring before the pandemic and those who started during the pandemic. We also find that the gender gap in mental health widens during the pandemic, with women being more likely to report mental health issues. This could be explained by the increased care burden for women during COVID-19 and the lack of protection for this group by governments (Etheridge and Spanting, 2020; Davillas and Jones, 2021). Our analysis also reveals that caregivers who support more than one person experience higher levels of stress than those who care for only one person. Additionally, we find that individuals who began providing care during the pandemic also reduced their work hours, even among those who continued working during the pandemic.

The remainder of the paper is structured as follows. Section 2 presents the data, while Section 3 shows the empirical strategy. Section 4 discusses the results and Section 5 concludes.

2. Data

For this project, we use data from the UK Household Longitudinal Study (UKHLS) collected during the COVID-19 pandemic and in 2017/2018 (wave 9) and 2019 (interim wave for the COVID-19 survey). The UKHLS is a panel survey of 40,000 households in the UK that aims to collect microdata on health, socio-economic status, and social life at the individual and household level. The COVID-19 survey began in April 2020 and consisted of eight waves until March 2021 for circa 40% households of the original study.[1] Participants from previous UKHLS samples were invited to complete a short web survey or, for those without internet access, a telephone survey to understand the impact of the pandemic and track changes as the situation evolved. We use data from 2017/2018, 2019, and waves 1–8 of the COVID-19

[1] Due to the nature of the sample, the UKHLS COVID-19 survey recommends employing survey weights to retrieve estimates of the UK population. We used the longitudinal weights already provided in the standard files. For more information see https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/covid-19/user-guides/covid-19-user-guide.pdf

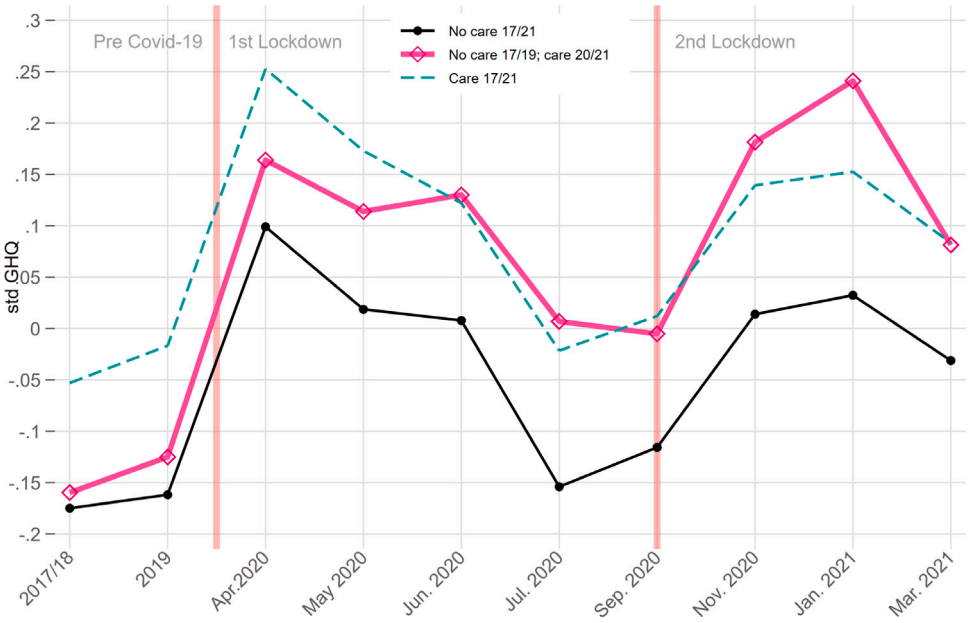


Fig. 2. Mental health (std GHQ) by informal care trajectory, 2017/2021.

survey to analyze the role of informal social care on people's mental health outside the household. The survey does not report the informal care inside the household after wave 2019 (i.e., for the COVID-19 waves produced during the pandemic). In Fig. 1, we have depicted the proportion of informal caregivers providing assistance within and outside their household over time. It appears that the proportion of caregivers providing informal care outside the household was relatively low before 2019 but increased significantly after the first lockdown. In contrast, the proportion of caregivers providing care within the household has remained relatively stable over time.

Our treatment group consists of all the individuals who before April 2020 have not done any informal care and after the April 2020 report to do informal care regularly over the pandemic period (measured in April 2020, November 2020 and March 2021). The control group is the rest of the population who has not reported to provide informal care before and after the COVID-19 pandemic (2017–2021). We have also considered another group, namely those who have provided care all through 2017–2021. In other words, using the care activities information we are able to construct different informal care trajectories, distinguishing between: *(a)* those who never provided care between 2017/18 and March 2021; *(b)* those who did not provide care between 2017/18 and 2019 but started to provide care between April 2020 and March 2021; and *(c)* those who provided care in the whole period 2017/18-March 2021. Moreover, using the overall care trajectory rather than the care status in each of the pre-post waves in which this information was available, we can exploit the variation in the mental health and employment outcomes for all the ten waves between 2017–2021 period.

We selected all the individuals older than 16 years[2] and focused on mental health as our main outcome variable. Our measure of mental health comes from the General Health Questionnaire (GHQ) in which individuals respond to 12 questions on the frequency over the last few weeks that they: have been able to concentrate, have lost sleep due to worries, have felt like they played a useful role, have been able to make decisions, have felt under strain, have had problems in overcoming difficulties, have been able to enjoy day-to-day activities, have been able to face problems, have been unhappy or depressed, have lost confidence, and have felt reasonably happy. In each of these questions, the individuals have the choice between 4 outcomes ranging from 1 (much less than usual) to 4 (better than usual). We have standardized this variable with a mean of 0 and a standard deviation of 1.

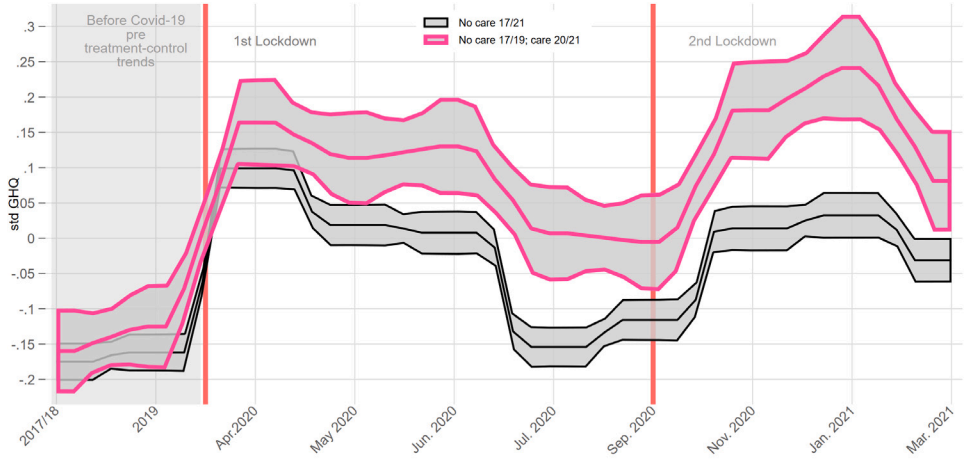
Our analyses also include several socio-demographic controls: gender, age, age squared, the highest level of education, marital status, number of children in the household, ethnicity, and region of residence. After listwise deletion of cases with missing information across key variables, we have a total of 4,170 individuals observed between 2017/18 and March 2021 with consistent information on their caring trajectory and mental health and employment measures. In the Appendix section, Table A.1 show the percentage of attrition, which is around 13.2%, for the pool of participants who have consistent information on caring activities. However, a closer inspection of the socio-demographic characteristics between the initial and the analytical sample, do not show any large or statistically significant difference between these two samples (Table A.2). Further, Table A.3 displays the descriptive statistics of the variables included in our estimation for the control and treatment groups, plus the group that provided care for the whole period. Overall, there are only a few differences between groups. Most notably, the people in the group that started to provide care during the pandemic usually are more likely to be women, in a union, and white (although this last one is not statistically different) compared to those who never provided care during the observed period. Table A.4 also shows the differences in demographic characteristics before and after the start of the COVID-19 pandemic, together with the mean difference between the two periods and the *p*-value associated with a T-test, denoting no major changes in the composition of the sample between the observed periods.

Moreover, Fig. 2 reports the standardized mental health index over time for the three groups after April 2020. Here we observe that people who always provided informal care report more mental issues than people who have never provided informal care. Further, since the beginning of the pandemic (April 2020), mental health issues have grown a lot for all the three groups, although people who started providing care and the ones who have always provided care have a higher levels and similar pattern during the pandemic.

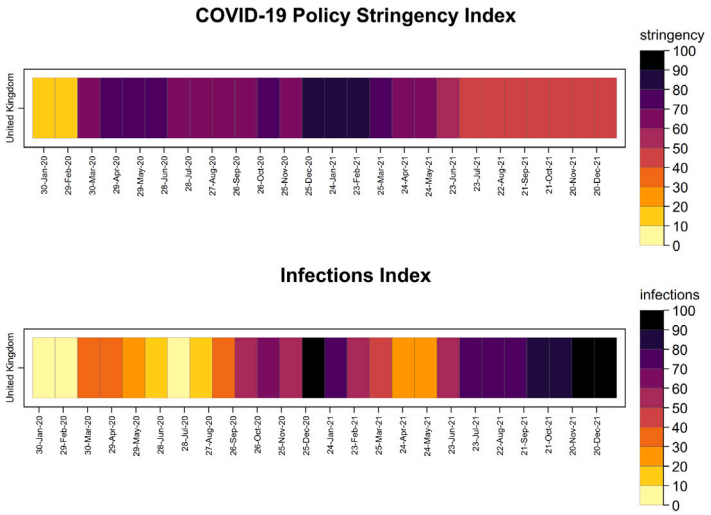
3. Empirical strategy

The specification adopted is a difference-in-differences (DiD) model to estimate the effects of informal care before and after the COVID-19

[2] In additional analyses, we have restricted the sample to 16–60 years, results do not change.



(a) Trends in mental health



(b) Policy changes and infections

Fig. 3. Parallel trends check (a) and UK contextual changes during the pandemic (b).

period on mental health, Eq. (1), following Angrist and Pischke (2009):

$$E(Y_i|D_i=1) - E(Y_i|D_i=0) = E(Y_{1i} - Y_{0i}|D_i=1) + [E(Y_{0i}|D_i=1) - E(Y_{0i}|D_i=0)] \quad (1)$$

The left-hand side of this equation gives the observed performance difference between the treated and control groups. The first right-hand side term represents the average treatment effect on the treated (ATT).

The estimation of the difference-in-differences for individual i and times $t-1$ (baseline) and $t+1$ (follow-up) is:

$$Y_{it} = \beta_0 + \beta_1 T_{(t+1)} + \beta_2 D_{(d_i=1)} + \beta_3 T_{(t+1)} * D_{(d_i=1)} + \beta_4 X_{it} + \gamma_i + \gamma_t + \epsilon_{it} \quad (2)$$

In this study, we use OLS and random effects to estimate the changes in mental health (Y_{it}) for those who never provided care before–after the start of the pandemic and those who did not provide any care in the pre-pandemic period but started to do so in the pandemic period. Therefore, $T_{(t+1)}$ is a dummy variable taking value 1 if the period considered is $t+1$ (post lockdown period, April 2020–March 2021) and 0 for the pre-pandemic period (2017/18 and 2019); $D_{(d_i=1)}$ is a dummy variable for the treatment, taking value 0 for those individuals i who never provided care between 2017 and March 2021, and value 1 when individual i is part of the treated group: switching from no care in 2017/19 (pre-pandemic period) to care in April 2020–March 2021 (pandemic period); $T_{(t+1)} * D_{(d_i=1)}$ is an interaction variable taking value 1 when individual i is treated in $t+1$, this represents the difference between treatment-control groups before and after the pandemic; X_{it} is a vector of covariates that includes age, gender, ethnicity, highest educational attainment (i.e., University degree, Other higher degree, A-level or equivalent, GCSE or equivalent, Other qualification, and no qualifications) marital status (Single, Married/Cohabiting, Separated/divorced, Widowed), Number of school age children in the household, and regions fixed effects; γ_i and γ_t, respectively, represent the individual and unobserved heterogeneity and ϵ_{it} the error term.

As robustness checks we investigated whether the parallel trend assumption holds by graphically inspecting the difference between those who never provide care in the whole observed period, 2017/2021 (control group) and those who switched from no care in 2017/19 to care between April 2020 and March 2021 (treatment group) using a local polynomial regression with 95% confidence intervals (Fig. 3, panel a). Further, we also include in the same Figure, panel b, a description of the changes in the stringency of UK measures and COVID-19 infections across time. The period of higher restrictions correspond to the first Lockdown, between April 2020 and June 2020, and second lockdown and Christmas, between November 2020 and March 2021 (with the

highest stringency during December 2020 and February 2021). This changes in stringency measures pretty much coincides with the COVID-19 infections which had a peak in March/April 2020 and October 2020 to February 2021 (with the highest infection rate in December 2020). The changes in mental health for all the treatment and control groups seems to follow the patterns related to the infections and stringency measures adopted by the UK. Importantly, as mentioned before, all of our models include time and macro-area of residence fixed effects for capturing these common heterogeneities. Then, in Table A.5 we run a OLS regression model for the pre-pandemic period interacting our care trajectory variable with the period/wave variable. Also, in this case, we did not observe any statistically effect of caring, suggesting no difference in the mental health outcome between treatment and control groups in the period before the pandemic.

we also estimated individual fixed and random effects on mental health using the informal social care as a time-variant variable.[3] Results from these supplementary analyses are available in Table A.8 in the appendix section. By allowing the caring activity to vary within individuals over time, we can perform an individual fixed effect model which should remove any (constant) unobserved heterogeneity. Furthermore, in these models we also included time-variant employment controls to assess whether the direct effects of caring on mental health remain over and above employment conditions.

4. Results

In Table 1 we present the DiD model for the group who have provided no care in the whole period (control group) and the group of individuals who have provided care only after the COVID-19 period (treated group). In the upper part of the Table we present the main point estimate, the ATT, and in the bottom part the mean differences between control and treatment groups before and after the pandemic. We observe that the ATT is positive and statistically significant indicating that people who have started to provide informal care have suffered deterioration in their mental health status. In particular, the DiD estimator shows an increase of 0.17 sd (column with controls) in mental health issues for the treated group.

In addition, we have also explored gender heterogeneity amongst informal care workers. For this purpose, we estimated Eq. (2) for men and women separately and reported the results in Table 2. The estimates of this model show that the mental health of women who have started to provide care after the pandemic are more affected than similar men. Part of this could be explained by the fact that the percentage of women who reported to provide care after the pandemic is nearly 63%. This empirical evidence conforms well to the existing literature which has found an relation between mental health and gender. For example, Etheridge and Spanting (2020), using UKHLS data, document a significant decline in well-being in the UK, which is twice as large for women as for men. Similarly, Banks and Xu (2020) and Proto and Quintana-Domeque (2021a,b), both using UKHLS, show that women's mental health status in the UK, measured with the GHQ-12, around April 2020, deteriorated relative to that of men in comparison to the pre-pandemic period. As of March 2021, this gender gap seems to persist (Proto and Quintana-Domeque, 2021a,b). Using the same dataset, Davillas and Jones (2021) show that gender is the greatest determinant in explaining GHQ-12 differences in the COVID-19 period.

To explore further these results we estimated the overall relation between whether informal care was provided or not and mental health (Tables A.6 and A.7 in Appendix). We have used linear regression analysis (OLS) and random effects analysis (RE). The main key variable is the informal care trajectory, which takes value 1 if the individual provides care only after the pandemic, value 2 if the individual provides care before and after COVID-19, and value 0 if they did not provide care at all (reference category). We observe in Table A.6 that the relationship between mental health and informal care is positive and significant relative to those who do not provide care. That is, those who provide informal care have more mental health issues. The two models (OLS and RE) give very similar results. These findings are similar when we look at the relation before and after the pandemic (see Table A.7). However, the individuals who do not provide care before the pandemic but start to do so right after do not report mental health issues in the pre-pandemic period. This before–after analysis shows again the change in mental health when individuals start to provide care. Therefore, entering in the labor market as an informal care worker leads to a deterioration of mental health, ultimately affecting the quality of the social care service. Finally, as a further robustness check of this relation, we also report in Table A.8 of the Appendix, the estimates of a fixed effect models which looks at individual within variation only. As before, we find a positive and significant relationship between informal care and mental health in general. This empirical result adds further evidence to the scarce literature on the relationship between mental health and the well-being of informal carers during the pandemic (Giebel et al., 2020).

Table 1
DiD results on mental health (std GHQ).

	Mental health (std GHQ)	
	Without controls	With controls
ATT	0.184***	0.169***
	(0.0603)	(0.0563)
N (ID/Wave)	47,609	47,609
R-squared	0.009	0.068
Mean control t(0)	−0.135	−0.317
Mean treated t(0)	−0.134	−0.323
Diff t(0)	0.00132	−0.00689
Mean control t(1)	0.0329	−0.137
Mean treated t(1)	0.218	0.0258
Diff t(1)	0.185	0.162

No care 17/21 vs no care 17/19; care 20/21
Standard errors in parentheses; clustered at respondent id level;
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
We also controlled for gender, age, age2, ethnicity, education, marital status, number of children in schooling age, and GOR and wave fixed effects;
UKHLS COVID-19 survey; weighted data.

Table 2
DiD results on mental health (std GHQ) stratified by gender.

	Mental Health (std GHQ)			
	Woman		Man	
	Without ctls	With ctls	Without ctls	With ctls
ATT	0.195**	0.181**	0.131*	0.118
	(0.085)	(0.076)	(0.074)	(0.078)
N (ID/Wave)	24,560	24,560	23,049	23,049
R-squared	0.013	0.067	0.005	0.063
Mean control t(0)	−0.0694	0.362	−0.198	−0.373
Mean treated t(0)	−0.111	0.337	−0.166	−0.326
Diff t(0)	−0.0420	−0.0255	0.0323	0.0473
Mean control t(1)	0.167	0.435	−0.0924	−0.242
Mean treated t(1)	0.320	0.590	0.0707	−0.0763
Diff t(1)	0.153	0.155	0.163	0.166

No care 17/21 vs no care 17/19; care 20/21
Standard errors in parentheses; clustered at respondent id level;
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
We also controlled for age, age2, ethnicity, education, marital status, number of children in schooling age, and GOR and wave fixed effects;
UKHLS COVID-19 survey; weighted data.

[3] In these models we also computed the Houseman test and added the results from this test in the table notes

Table 3
Mental health (std GHQ) among carers by number of people in care and period.

	Pooled OLS					
	(1) 2017/21		(2) 2017/19		(3) 2020/21	
	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.
Carers (ref. only one person)						
More than one person	0.085***	(0.030)	−0.007	(0.056)	0.113***	(0.034)
N (ID/Wave)	14,794		3,303		11,491	
R2	0.067		0.086		0.060	
RE						
	(1) 2017/21		(2) 2017/19		(3) 2020/21	
	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.
Carers (ref. only one person)						
More than one person	0.068***	(0.018)	−0.009	(0.040)	0.093***	(0.020)
N (ID/Wave)	14,794		3,303		11,491	
R2 overall	0.061		0.064		0.054	

Standard errors in parentheses; clustered at respondent id level;
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
We also controlled for gender, age, age2, ethnicity, education, marital status, number of children in schooling age, and GOR and wave fixed effects;
UKHLS COVID-19 survey; weighted data.

The intensity of care is also another important factor to consider: caregivers who spend longer hours looking after their dependents are at a higher risk of experiencing negative impacts on their daily life and health (Bremer et al., 2012; Kumagai, 2017). Among the people who reported that they provide care during the sample period, we estimated pooled OLS and RE models to understand if the family burden is a factor associated with worse mental health. Table 3 reports two models (OLS and RE) in which the key variable takes value 1 if people report caring for more than one person and 0 if they care only for one person. We estimated the models for the whole period (column 1), before the pandemic (column 2), and after the pandemic (column 3). We observe that the coefficients during the whole period are positive and statistically significant among both specifications (OLS and RE) for those who provide care to more than one person, however, it seems that most of the differences between the two groups are produced from the data relating to the time of the pandemic.

The pandemic was not only a health shock but also an economic one that led to sharp falls in labor demand and supply in many sectors of the economy (IFS 2020). For this reason, we explored if people who started to provide care during the pandemic have reduced their work hours. Informal caring activities could reduce labor supply, ultimately impacting on carers income and increasing the risk of economic hardship or deprivation. Table 4 shows the numbers of paid work hours for the treatment and control groups. The outcome variable is the logarithm of the number of hours in paid work and the controls are the same as those used in the main specification. In this table, we observe that the number of hours decreased for the group who started to provide care after the pandemic, despite the fact that the characteristics of these two groups are very similar, as reported in Table A.4 of Appendix. It is well know that people who provide informal care usually report lower number of hours worked. Most of the studies have found a negative relationship between high frequency of caregiving and work hours/employment (Berecki-Gisolf et al., 2008; Bolin et al., 2008).

Table 4
DiD results on log of (paid) worked hours.

	(Log) worked hours	
	(2) without ctls	(3) with ctls
ATT	−0.120***	−0.101***
	(0.0313)	(0.0311)
N (ID/Wave)	17,988	17,988
R-squared	0.003	0.123
Mean control t(0)	3.402	2.407
Mean treated t(0)	3.433	2.439
Diff t(0)	0.031	0.032
Mean control t(1)	3.430	2.378
Mean treated t(1)	3.340	2.310
Diff t(1)	−0.0897	−0.0687

No care 17/21 vs no care 17/19; care 20/21
Standard errors in parentheses; clustered at respondent id level;
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
We also controlled for gender, age, age2, ethnicity, education, marital status, number of children in schooling age, and GOR and wave fixed effects;
UKHLS COVID-19 survey; weighted data.

5. Conclusions and discussion

That mental health deteriorates during periods of shocks is well known (Ruhm, 2000). However, it is not clear how such unexpected events (recessions, pandemics, etc.) have an impact on different groups of society. In this paper, exploiting new rich survey data collected by Understanding Society during the COVID-19 period (2017–2021) we have studied whether the unexpected event of the pandemic has had a bigger impact on the mental health of carers than the population who do not provide care across the whole period. As expected, our empirical results confirm our hypothesis that people who started to provide care during the pandemic have reported a worse mental health status. This deterioration might have had a negative impact on the quality of social care delivered. While our dataset does not allow us to assess these effects directly, policymakers should still consider extending welfare and social protection to these workers.

Our empirical analysis has also confirmed that the mental health gender gap has widened during the COVID-19, with women experiencing more mental health issues than men. As women tend to cope with multiple family issues, this shock has exacerbated their psychological distress. We also suggest that the intensity of care is a factor to consider in future policies. Furthermore, the number of hours in paid work for caregivers after the pandemic has been reduced with respect to those who do not have any care duty. This also calls policymakers to intervene by providing measures to cushion these effects. Importantly, although we found an effect on both mental health and working hours, it is difficult to establish a causal relationship between these two outcomes with our current empirical design. Mental health issues could reduce labor supply but also economic hardship, due to lower productivity, can affect the latter. Despite this limitation, knowing that informal carer activities has an effect on these two dimensions should

help policy makers to design interventions targeted to both mental and economic well-being of carers.

Another limitation of this study is that it does not include information on vaccination when studying the impact of informal caregiving on mental health. Although the vaccination policy only started towards the end of our sample period (early December 2020), we cannot exclude an anticipatory effect that may threaten the identification of the casual effect. Finally, given that COVID-19 is a contagious disease, the non-interference (or spillover effects) assumption may not hold. Future research should exploit more time-periods to reduce potential bias from these issues.

Last but not least, our findings might also be relevant at the international level and should inform countries with a higher incidence of informal care such as Spain and Italy. The COVID-19 pandemic reminds the global community that the domestic environment is a complex context for the care of the elderly and people in need.

Credit authorship contribution statement

Joan E. Madia: Conceptualization, Data curation, Formal analysis, Methodology, Software, Visualization, Writing – original draft, Reviewing and editing. **Francesco Moscone:** Conceptualization, Data curation, Methodology, Software, Visualization, Writing – review & editing. **Catia Nicodemo:** Conceptualization, Data curation, Formal analysis, Methodology, Software, Visualization, Writing – original draft, Reviewing and editing.

Data availability

The authors do not have permission to share data.

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Appendix

See Tables A.1–A.8.

Table A.1
Description of attrition in the sample.

Wave	Observations	Percent
2017/18	4,804	100
2019	4,768	99.25
Apr-20	4,697	97.77
May-20	4,450	92.63
Jun-20	4,418	91.97
Jul-20	4,350	90.55
Sep-20	4,266	88.80
Nov-20	4,278	89.05
Jan-21	4,121	85.78
Mar-21	4,170	86.80

UKHLS COVID-19 survey.

Table A.2
Summary statistics initial and analytical samples.

	(1) Initial sample			(2) Analytic sample			(3) Mean difference and p-val
	mean	min	max	mean	min	max	
Caring outside the household	0.18	0	1	0.19	0	1	−0.01
Age	52.52	16	92	52.83	16	92	−0.31
Woman	0.52	0	1	0.52	0	1	0.00
White	0.94	0	1	0.94	0	1	0.00
Mixed	0.02	0	1	0.01	0	1	0.01
South Asian	0.02	0	1	0.02	0	1	0.00
Chinese & other Asian	0.01	0	1	0.01	0	1	0.00
Blacks	0.01	0	1	0.01	0	1	0.00
Arabs and other ethnic	0.01	0	1	0.01	0	1	0.00
University Degree	0.32	0	1	0.32	0	1	0.00
Other higher degree	0.12	0	1	0.12	0	1	0.00
A-level etc	0.22	0	1	0.21	0	1	0.01
GCSE etc	0.20	0	1	0.20	0	1	0.00
Other qualification	0.09	0	1	0.08	0	1	0.01
No qualification	0.06	0	1	0.06	0	1	0.00
Single	0.24	0	1	0.23	0	1	0.01
Married/Cohabiting	0.65	0	1	0.65	0	1	0.00
Separated/divorced	0.07	0	1	0.07	0	1	0.00
Widowed	0.05	0	1	0.05	0	1	0.00
N.of school age children in the household	0.33	0	9	0.31	0	4	0.02
North East	0.04	0	1	0.04	0	1	0.00

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Table A.2 (*continued*).

	(1) Initial sample			(2) Analytic sample			(3) Mean difference and p-val
	mean	min	max	mean	min	max	
North West	0.10	0	1	0.10	0	1	0.00
Yorkshire and The Humber	0.08	0	1	0.09	0	1	−0.01
East Midlands	0.07	0	1	0.08	0	1	−0.01
West Midlands	0.09	0	1	0.08	0	1	0.01
East of England	0.12	0	1	0.12	0	1	0.00
London	0.10	0	1	0.10	0	1	0.00
South East	0.15	0	1	0.16	0	1	−0.01
South West	0.09	0	1	0.10	0	1	−0.01
Wales	0.05	0	1	0.04	0	1	0.01
Scotland	0.08	0	1	0.08	0	1	0.00
Northern Ireland	0.02	0	1	0.02	0	1	0.00
2017/18	0.12	0	1	0.10	0	1	0.02
2019	0.11	0	1	0.10	0	1	0.01
April 2020	0.11	0	1	0.10	0	1	0.01
May 2020	0.10	0	1	0.10	0	1	0.00
June 2020	0.09	0	1	0.10	0	1	−0.01
July 2020	0.09	0	1	0.10	0	1	−0.01
August 2020	0.09	0	1	0.10	0	1	−0.01
November 2020	0.11	0	1	0.10	0	1	0.01
January 2021	0.09	0	1	0.10	0	1	−0.01
March 2021	0.08	0	1	0.10	0	1	−0.02
Observations	4804			4170			

For testing the significance of the mean difference in column 3 we performed a T-test.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
UKHLS COVID-19 survey.

Table A.3
Summary statistics by care trajectory, 2017/21.

	(1) No care 17/21	(2) No care 17/19; care 20/21	(3) Care 17/21	(4) No care 17/21 vs No care 17/19; care 20/21	(5) No care 17/21 vs Care 17/21
	mean	mean	mean	mean diff and p-val	mean diff and p-val
Age	51.59	53.55	56.16	−1.96	−4.57***
Woman	0.48	0.59	0.69	−0.11***	−0.21***
White	0.92	0.95	0.96	0.03	0.04
Mixed	0.02	0.02	0.00	0.00	0.02
South Asian	0.03	0.01	0.02	0.02	0.01
Chinese & other Asian	0.01	0.01	0.00	0.00	0.01
Blacks	0.01	0.01	0.01	0.00	0.00
Arabs and other ethnic	0.01	0.00	0.00	0.01	0.00
Degree	0.31	0.36	0.30	−0.05	0.01
Other higher degree	0.11	0.13	0.17	−0.02	0.06***
A-level or equivalent	0.22	0.20	0.21	0.02	0.01
GCSE or equivalent	0.19	0.21	0.23	−0.02	−0.03
Other qualification	0.09	0.07	0.07	0.02	0.02
No qualification	0.08	0.04	0.03	0.04	0.05
Single	0.27	0.19	0.15	0.08***	0.12***
Married/Cohabiting	0.62	0.69	0.69	−0.07	−0.07
Separated/divorced	0.06	0.08	0.12	−0.02	−0.06
Widowed	0.05	0.04	0.04	0.01	0.01
N. of sch. age children in the hh	0.30	0.43	0.32	−0.13	−0.02
North-East	0.04	0.05	0.05	−0.01	−0.01
North-West	0.10	0.10	0.09	0.00	−0.01
Yorkshire and The Humber	0.08	0.10	0.08	−0.02	0.00
East Midlands	0.08	0.07	0.08	0.01	0.00
West Midlands	0.08	0.09	0.12	−0.01	−0.04***
East of England	0.12	0.13	0.10	−0.01	0.02
London	0.11	0.08	0.09	0.03	0.02
South-East	0.16	0.13	0.14	0.03	0.02
South-West	0.09	0.08	0.09	0.01	0.00
Wales	0.04	0.07	0.05	−0.03	−0.01
Scotland	0.08	0.09	0.10	−0.01	−0.02
Northern Ireland	0.02	0.03	0.02	−0.01	0.00

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Table A.3 (*continued*).

	(1)	(2)	(3)	(4)	(5)
	No care 17/21	No care 17/19; care 20/21	Care 17/21	No care 17/21 vs No care 17/19; care 20/21	No care 17/21 vs Care 17/21
	mean	mean	mean	mean diff and p-val	mean diff and p-val
2017/18	0.10	0.10	0.10	−0.01	−0.02
2019	0.10	0.10	0.10	0.00	0.00
April 2020	0.10	0.10	0.10	0.00	0.00
May 2020	0.10	0.10	0.10	0.00	0.00
June 2020	0.10	0.10	0.10	0.00	0.00
July 2020	0.10	0.10	0.10	0.00	0.00
August 2020	0.10	0.10	0.10	0.00	0.00
November 2020	0.10	0.10	0.10	0.00	0.00
January 2021	0.10	0.10	0.10	0.00	0.00
March 2021	0.10	0.10	0.10	0.00	0.00
Observations	**2,857**	**662**	**651**		
ID/Wave	**33,161**	**7,251**	**7,197**		

For testing the significance of the mean difference in columns 4 and 5 we performed a T-test.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
UKHLS COVID-19 survey; weighted data.

Table A.4
Summary statistics by time period.

	(1)			(2)			(3)
	Before Covid-19 (2017/19)			After Covid-19 (Apr. 2020/Mar. 2021)			Before vs After
	mean	min	max	mean	min	max	mean difference and p-value
No care 17/21	0.73	0	1	0.74	0	1	−0.01
No care 17/19; care 20/21	0.14	0	1	0.14	0	1	0.00
Care 17/21	0.14	0	1	0.12	0	1	0.02
Age	51.94	16	96	52.55	17	97	−0.61
Woman	0.53	0	1	0.52	0	1	0.01
White	0.94	0	1	0.92	0	1	0.02
Mixed	0.01	0	1	0.02	0	1	−0.01
South Asian	0.02	0	1	0.03	0	1	0.01
Chinese & other Asian	0.01	0	1	0.01	0	1	0.00
Blacks	0.01	0	1	0.01	0	1	0.00
Arabs and other ethnic	0.01	0	1	0.01	0	1	0.00
Degree	0.34	0	1	0.31	0	1	0.03
Other higher degree	0.13	0	1	0.12	0	1	0.01
A-level or equivalent	0.21	0	1	0.22	0	1	−0.01
GCSE or equivalent	0.19	0	1	0.20	0	1	−0.01
Other qualification	0.08	0	1	0.09	0	1	−0.01
No qualification	0.05	0	1	0.07	0	1	−0.02
Single	0.21	0	1	0.25	0	1	−0.04
Married/Cohabiting	0.67	0	1	0.63	0	1	0.04
Separated/divorced	0.07	0	1	0.07	0	1	0.00
Widowed	0.05	0	1	0.05	0	1	0.00
Number of sch. age children in the hh	0.32	0	9	0.32	0	9	0.00
North-East	0.04	0	1	0.04	0	1	0.00
North-West	0.10	0	1	0.10	0	1	0.00
Yorkshire and The Humber	0.08	0	1	0.08	0	1	0.00
East Midlands	0.08	0	1	0.08	0	1	0.00
West Midlands	0.08	0	1	0.09	0	1	−0.01
East of England	0.12	0	1	0.12	0	1	0.00
London	0.11	0	1	0.10	0	1	0.01
South-East	0.16	0	1	0.15	0	1	0.01
South-West	0.09	0	1	0.09	0	1	0.00
Wales	0.04	0	1	0.05	0	1	−0.01
Scotland	0.08	0	1	0.08	0	1	0.00
Northern Ireland	0.02	0	1	0.02	0	1	0.00
ID/Waves	9,979			37,630			

For testing the significance of the mean difference in column 3 we performed a T-test.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
UKHLS COVID-19 survey; weighted data.

Table A.5
Pre-trends check. Treatment-time interaction before the pandemic.

	Without ctls	With ctls
Caring (ref no care 17/21)		
nocare17/19; care20/21	−0.02	−0.028
	(0.04)	(0.04)
Wave (ref. 2017/18)		
2019	0.05*	0.038
	(0.03)	(0.03)
Caring#Wave		
nocare17/19; care20/21#2019	0.04	0.05
	(0.06)	(0.06)
_cons	−0.16	−0.06
Obs	9979	9979

Standard errors in parentheses; clustered at respondent id level;
Estimation based on waves with both caring and GHQ information
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
UKHLS COVID-19 survey; weighted data.

Table A.6
Relation between care trajectory and mental health (std GHQ).

	(1) OLS Without controls		(2) OLS with controls		(3) OLS with controls 26-64 sample		(4) RE with controls		(5) RE with controls 26-64 sample	
	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.
Care (ref. No care 17/21)										
No care17/19 Care 20/21	0.147***	(0.055)	0.126**	(0.052)	0.157**	(0.062)	0.092***	(0.031)	0.108***	(0.037)
Care 17/21	0.128***	(0.040)	0.109***	(0.041)	0.138***	(0.052)	0.109***	(0.030)	0.125***	(0.037)
Age			0.005	(0.006)	0.020	(0.019)	−0.006	(0.004)	0.013	(0.011)
Age2			−0.000**	(0.000)	−0.000	(0.000)	−0.000	(0.000)	−0.000*	(0.000)
Gender (ref. man)										
Woman			0.201***	(0.033)	0.200***	(0.043)	0.201***	(0.020)	0.206***	(0.027)
Education (ref. Degree)										
Other higher degree			−0.012	(0.042)	0.002	(0.057)	−0.011	(0.031)	−0.013	(0.040)
A-level			−0.066	(0.040)	−0.018	(0.051)	−0.066**	(0.028)	−0.030	(0.036)
GCSE			0.003	(0.045)	0.043	(0.059)	−0.008	(0.030)	0.034	(0.040)
Other qualification			0.085	(0.094)	0.090	(0.152)	0.008	(0.043)	0.055	(0.067)
No qualification			0.053	(0.088)	0.117	(0.196)	0.023	(0.052)	0.148	(0.108)
Ethnicity (ref. White)										
Mixed			−0.003	(0.143)	0.134	(0.165)	0.077	(0.095)	0.078	(0.114)
South Asian			0.057	(0.121)	0.185	(0.113)	0.078	(0.063)	0.158**	(0.076)
Chinese/other Asian			−0.209	(0.146)	−0.057	(0.102)	−0.045	(0.095)	−0.018	(0.101)
Blacks			−0.202*	(0.121)	−0.132	(0.133)	−0.106	(0.078)	−0.143	(0.091)
Arabs/other			−0.120	(0.277)	−0.023	(0.317)	−0.111	(0.134)	−0.130	(0.145)
Marital status (ref. Single)										
Married/Cohabiting			−0.235***	(0.052)	−0.302***	(0.064)	−0.193***	(0.038)	−0.247***	(0.046)
Separated/divorced			0.050	(0.087)	−0.004	(0.112)	0.052	(0.056)	−0.014	(0.068)
Widowed			−0.084	(0.082)	−0.233	(0.147)	−0.047	(0.062)	−0.106	(0.128)
N. of children in schooling age			0.027	(0.019)	0.008	(0.021)	0.018	(0.015)	0.004	(0.016)
GOR (ref. North-East)										
North-West			0.025	(0.086)	−0.057	(0.107)	0.016	(0.062)	−0.020	(0.078)
Yorkshire and The Humber			−0.002	(0.085)	0.009	(0.109)	−0.020	(0.061)	−0.020	(0.077)
East Midlands			0.101	(0.098)	0.085	(0.130)	0.053	(0.063)	0.059	(0.079)
West Midlands			0.035	(0.105)	0.016	(0.141)	0.011	(0.061)	−0.020	(0.075)
East of England			0.113	(0.093)	0.110	(0.124)	0.026	(0.059)	0.005	(0.073)
London			0.105	(0.093)	0.121	(0.123)	0.087	(0.066)	0.091	(0.080)
South-East			−0.006	(0.079)	−0.032	(0.103)	−0.012	(0.056)	−0.022	(0.070)
South-West			0.065	(0.084)	0.059	(0.108)	0.033	(0.059)	0.026	(0.073)
Wales			0.081	(0.103)	0.127	(0.131)	0.052	(0.066)	0.102	(0.085)
Scotland			0.054	(0.088)	0.057	(0.114)	−0.018	(0.060)	−0.027	(0.074)
Northern Ireland			−0.005	(0.105)	−0.031	(0.133)	0.006	(0.076)	−0.011	(0.090)
N (ID/Wave)	47,609		47,609		28,497		47,609		28,497	
R2	0.014		0.065		0.054		0.053		0.040	

Standard errors in parentheses; clustered at respondent id level;
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
We also controlled for gender, age, age2, ethnicity, education, marital status, number of children in schooling age, and GOR and wave fixed effects;
UKHLS COVID-19 survey; weighted data.

Table A.7
Relation between care trajectory and mental health (std GHQ) before/after COVID-19 outbreak.

	(1) OLS		(2) OLS		(3) RE		(4) RE	
	Before COVID-19		After COVID-19		Before COVID-19		After COVID-19	
	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.
Care (ref. No care 17/21)								
No care17/19 Care 20/21	−0.006	(0.036)	0.159***	(0.061)	−0.011	(0.031)	0.123***	(0.034)
Care 17/21	0.082**	(0.040)	0.117**	(0.046)	0.080**	(0.033)	0.120***	(0.032)
Age	0.011*	(0.006)	0.003	(0.007)	0.006	(0.005)	−0.013***	(0.005)
Age2	−0.000***	(0.000)	−0.000*	(0.000)	−0.000***	(0.000)	0.000	(0.000)
Gender (ref. man)								
Woman	0.088***	(0.029)	0.230***	(0.037)	0.095***	(0.022)	0.229***	(0.022)
Education (ref. Degree)								
Other higher degree	0.090**	(0.044)	−0.039	(0.046)	0.054	(0.034)	−0.031	(0.034)
A-level	0.013	(0.037)	−0.087*	(0.045)	0.010	(0.030)	−0.088***	(0.030)
GCSE	0.099**	(0.042)	−0.022	(0.050)	0.063**	(0.031)	−0.030	(0.032)
Other qualification	0.172**	(0.077)	0.063	(0.103)	0.129***	(0.047)	−0.023	(0.046)
No qualification	0.072	(0.066)	0.043	(0.099)	0.097*	(0.056)	−0.007	(0.055)
Ethnicity (ref. White)								
Mixed	0.155	(0.144)	−0.036	(0.149)	0.215**	(0.102)	0.059	(0.104)
South Asian	0.144	(0.108)	0.039	(0.132)	0.101	(0.067)	0.066	(0.068)
Chinese/other Asian	0.083	(0.133)	−0.260*	(0.155)	0.216*	(0.118)	−0.036	(0.108)
Blacks	−0.025	(0.115)	−0.242*	(0.129)	0.013	(0.094)	−0.143*	(0.087)
Arabs/other	−0.056	(0.181)	−0.132	(0.302)	−0.069	(0.132)	−0.114	(0.153)
Marital status (ref. Single)								
Married/Cohabiting	−0.270***	(0.051)	−0.230***	(0.057)	−0.202***	(0.042)	−0.190***	(0.041)
Separated/divorced	−0.004	(0.073)	0.060	(0.098)	0.056	(0.062)	0.050	(0.060)
Widowed	−0.055	(0.079)	−0.092	(0.089)	−0.004	(0.068)	−0.061	(0.067)
N. of children in schooling age	0.034*	(0.020)	0.024	(0.021)	0.013	(0.017)	0.018	(0.017)
GOR (ref. North-East)								
North-West	−0.037	(0.088)	0.038	(0.095)	−0.056	(0.066)	0.028	(0.065)
Yorkshire and The Humber	−0.039	(0.082)	0.003	(0.094)	−0.066	(0.066)	−0.006	(0.067)
East Midlands	−0.034	(0.086)	0.133	(0.110)	−0.056	(0.067)	0.072	(0.068)
West Midlands	−0.097	(0.087)	0.067	(0.118)	−0.116*	(0.066)	0.055	(0.067)
East of England	0.010	(0.087)	0.138	(0.103)	−0.019	(0.065)	0.046	(0.063)
London	−0.081	(0.084)	0.148	(0.105)	−0.065	(0.068)	0.135*	(0.071)
South-East	−0.065	(0.077)	0.004	(0.087)	−0.067	(0.062)	0.007	(0.061)
South-West	0.022	(0.083)	0.072	(0.092)	0.015	(0.067)	0.040	(0.065)
Wales	0.035	(0.096)	0.091	(0.116)	−0.019	(0.073)	0.075	(0.072)
Scotland	−0.026	(0.083)	0.071	(0.098)	−0.068	(0.066)	0.006	(0.065)
Northern Ireland	0.019	(0.113)	−0.013	(0.118)	0.018	(0.089)	0.001	(0.081)
N (ID/Wave)	9,979		37,630		9,979		37,630	
R2	0.057		0.063		0.045		0.051	

Standard errors in parentheses; clustered at respondent id level;
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
We also controlled for gender, age, age2, ethnicity, education, marital status, number of children in schooling age, and GOR and wave fixed effects; UKHLS COVID-19 survey; weighted data.

Table A.8
Fixed and random effects estimation on mental health (std GHQ).

	(1) FE		(2) FE		(3) FE		(4) RE		(5) RE		(6) RE	
	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.	Coef.	Std err.
Caring (ref. No)												
Yes	0.164***	(0.025)	0.091***	(0.026)	0.087***	(0.026)	0.225***	(0.020)	0.098***	(0.021)	0.092***	(0.021)
Age	0.068***	(0.018)	0.003	(0.021)	−0.007	(0.022)	−0.009**	(0.004)	−0.004	(0.004)	−0.002	(0.004)
Age2	−0.000	(0.000)	−0.000	(0.000)	0.000	(0.000)	0.000	(0.000)	−0.000	(0.000)	−0.000*	(0.000)
Gender (ref. man)												
Woman	–	–	–	–	–	–	0.181***	(0.020)	0.185***	(0.020)	0.188***	(0.020)
Education (ref. Degree)												
Other higher degree	–	–	–	–	–	–	−0.001	(0.031)	0.010	(0.031)	0.012	(0.031)
A-level	–	–	–	–	–	–	−0.037	(0.028)	−0.032	(0.028)	−0.036	(0.028)
GCSE	–	–	–	–	–	–	0.015	(0.029)	0.024	(0.029)	0.017	(0.030)
Other qualification	–	–	–	–	–	–	0.028	(0.043)	0.040	(0.043)	0.033	(0.044)
No qualification	–	–	–	–	–	–	0.043	(0.053)	0.060	(0.052)	0.058	(0.056)
Ethnicity (ref. White)												
Mixed	–	–	–	–	–	–	0.116	(0.089)	0.089	(0.090)	0.089	(0.097)
South Asian	–	–	–	–	–	–	0.121*	(0.064)	0.084	(0.064)	0.073	(0.068)
Chinese/other Asian	–	–	–	–	–	–	0.076	(0.105)	0.056	(0.103)	0.043	(0.103)
Blacks	–	–	–	–	–	–	−0.071	(0.079)	−0.097	(0.080)	−0.131*	(0.079)
Arabs/other	–	–	–	–	–	–	−0.051	(0.134)	−0.095	(0.134)	−0.093	(0.149)
Marital status (ref. Single)												
Married/Cohabiting	–	–	–	–	–	–	−0.222***	(0.038)	−0.188***	(0.038)	−0.157***	(0.038)
Separated/divorced	–	–	–	–	–	–	0.023	(0.056)	0.063	(0.056)	0.089	(0.057)
Widowed	–	–	–	–	–	–	−0.104*	(0.062)	−0.034	(0.062)	0.007	(0.064)
N. of children in schooling age	–	–	–	–	–	–	0.035**	(0.015)	0.013	(0.015)	0.011	(0.016)
GOR (ref. North-East)												
North-West	−0.079	(0.333)	−0.086	(0.319)	−0.122	(0.322)	0.012	(0.058)	0.014	(0.058)	−0.002	(0.060)
Yorkshire and The Humber	−0.037	(0.347)	−0.041	(0.326)	−0.056	(0.326)	−0.011	(0.059)	−0.006	(0.059)	−0.025	(0.061)
East Midlands	0.190	(0.328)	0.203	(0.312)	0.256	(0.312)	0.047	(0.061)	0.048	(0.061)	0.043	(0.063)
West Midlands	−0.034	(0.336)	−0.040	(0.321)	−0.013	(0.318)	−0.019	(0.059)	−0.012	(0.059)	−0.028	(0.061)
East of England	−0.170	(0.375)	−0.139	(0.360)	−0.084	(0.365)	0.019	(0.057)	0.027	(0.057)	0.011	(0.058)
London	0.097	(0.409)	0.110	(0.395)	0.124	(0.408)	0.056	(0.063)	0.062	(0.063)	0.053	(0.065)
South-East	−0.003	(0.351)	0.008	(0.337)	0.054	(0.341)	−0.013	(0.054)	−0.008	(0.054)	−0.026	(0.056)
South-West	0.014	(0.327)	0.014	(0.310)	0.062	(0.311)	0.044	(0.057)	0.049	(0.057)	0.017	(0.058)
Wales	0.099	(0.342)	0.064	(0.325)	0.124	(0.335)	0.031	(0.064)	0.029	(0.064)	−0.004	(0.066)
Scotland	−0.252	(0.387)	−0.258	(0.375)	−0.125	(0.370)	−0.023	(0.058)	−0.021	(0.058)	−0.038	(0.059)
Northern Ireland	0.279	(0.464)	0.286	(0.468)	0.317	(0.468)	−0.003	(0.075)	0.012	(0.075)	−0.006	(0.076)
Wave (ref. 2017/18)												
2019	–	–	0.036	(0.024)	0.028	(0.025)	–	–	0.037***	(0.013)	0.035**	(0.014)
Apr. 2020	–	–	0.298***	(0.034)	0.290***	(0.034)	–	–	0.297***	(0.015)	0.300***	(0.015)
Nov. 2020	–	–	0.243***	(0.041)	0.231***	(0.042)	–	–	0.243***	(0.016)	0.244***	(0.017)
Apr. 2021	–	–	0.177***	(0.045)	0.165***	(0.045)	–	–	0.179***	(0.016)	0.184***	(0.017)
Employment status (ref. not employed)												
Employed key worker	–	–	–	–	−0.097	(0.101)	–	–	–	–	−0.120***	(0.032)
Employed no key worker	–	–	–	–	−0.059	(0.097)	–	–	–	–	−0.123***	(0.030)
N (ID/Wave)	24,229		24,229		23,009		24,229		24,229		23,009	
R2/R2 overall	0.020		0.035		0.034		0.0420		0.0549		0.0597	

Standard errors in parentheses; clustered at respondent id level;
Estimation based on waves with both caring and GHQ information
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
UKHLS COVID-19 survey.
We also performed the following Hauseman test: FE - RE = diff (se) = 0.087 - 0.092 = −.005 (.0142587); chi2(23) = 23.72; Prob > chi2 = 0.4194 which indicates that both estimator, FE and RE, can be employed.

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