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Care in times of COVID-19: The impact of the pandemic on informal caregiving in Austria

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Abstract

Much attention has been paid to the care workforce and care home residents during the COVID-19 crisis, whereas the impact on informal caregivers has remained speculative. In Austria, like in other European countries, informal care is carried out overwhelmingly by (non-cohabiting) relatives. Limited care services available during the crisis, social-distancing, economic uncertainty and competing care needs within households may have changed the profile of informal caregiving and/or increased the psychological strain experienced by caregivers. Focusing on Austria, this study aims to empirically analyse the following research questions: how has the pandemic affected the incidence and intensity of informal caregiving? How has the psychological wellbeing during the first wave of the pandemic compared across different groups of informal caregivers, depending on their gender and parental status? We use a novel representative survey carried out in Austria after the implementation of lockdown measures (June 2020, N=2000). Bivariate and multivariate statistical analysis is applied to a set of survey items dedicated to respondent's informal caregiving before and after the start of the pandemic and psychological wellbeing. Findings suggest a tightening of care networks, with new carers likely to have stepped in to provide low intensity care to relatively autonomous people. Overall, both prevalence and intensity of informal care did not change significantly (compared to pre-crisis levels). Caregiving was associated with poor psychological outcomes, especially among those without children. Findings are discussed in relation to the emerging literature on the impact of the pandemic and to the policy measures implemented in Austria.

Keywords: COVID-19; informal care; psychological wellbeing; quantitative methods

Introduction

At the onset of the pandemic, many countries failed to acknowledge the importance of the long-term care (LTC) sector to protect older people in need of care, who were particularly at risk of infection and mortality due to SARS-CoV-2 (Comas-Herrera et al. 2020; Lorenz-Dant 2020). Early international figures show that around half of all deaths from COVID-19 during the first wave of the pandemic occurred among older people residing in care homes (Comas-Herrera et al. 2020). Only gradually has awareness increased of the underfunding and fragmentation of many national LTC systems and their effects on the outcomes of the pandemic (WHO 2020). But while the limelight has been firmly set on the LTC sector, in particular care homes, informal carers have received comparatively less attention.

Informal carers providing support to family members in need of LTC shoulder a large bulk of the burden of care, particularly in familialistic welfare states (Barczyk and Kredler 2019). For example, in Austria, around one million people provide unpaid care to family members, friends or neighbours, and it is estimated that more than 40 percent of people in need of care are cared for only by family members (Nagl-Cupal et al. 2018, Schmidt et al. forthcoming). Moreover, informal care is unequally distributed, i.e., much more prevalent and more intense among women and people in lower socio-economic groups across Europe (Rodrigues et al. 2017). There are strong indications that informal carers may have been particularly vulnerable to the consequences of the pandemic, even if not necessarily to the effects of the virus itself (Lorenz-Dant 2020). The gender and socio-economic status of informal carers may have placed them in a vulnerable situation, for example, as a result of job loss or kindergarten closings and home-schooling (Hamel and Salganicoff 2020).

Given the hidden nature of informal care and the pace at which the coronavirus pandemic and its consequences have spread, there is a dearth of reliable data on the situation of informal carers during the pandemic. What information exists is not fully available for all countries yet or is limited to results from convenience sample surveys. Taking advantage of unique data from a representative survey of Austria's working age population collected during the first wave of the COVID-19 pandemic, this study aims to bridge this gap. Specifically, it aims to identify driving factors of informal care during the crisis in a familialistic country such as Austria. It also aims to provide first-hand insights into the wellbeing situation of informal caregivers for frail or disabled family members, friends or neighbours during the first wave of the pandemic. After an empirical overview of the measures implemented in Austria and existing evidence in the next sections, we move on to describe the data used, methodology and results. We conclude with a discussion of the main findings in view of vulnerabilities of informal caregivers highlighted by the SARS-CoV-2 pandemic and possible policy implications.

The Austrian Experience with COVID-19

The management of the COVID-19 pandemic in Austria involved the early implementation of relatively stringent measures. Based on the Government Response Stringency Index (Hale et al. 2020), Austria ranked 9th out of 26 EU countries for which data were available at the outset of the pandemic (data from 8 April 2020)[1] but relaxed measures more quickly than others, ranking 14th by mid-June. The country's lockdown extended to schools and kindergartens, besides other services such as shops and restaurants and lasted from mid-March to the beginning of May approximately. Care homes were closed for visitors during lockdown and re-opened gradually from mid-April onwards, together with announced plans for a comprehensive screening for all staff and residents in care homes (BMSGPK, 2020). For community care services however, no federal guidelines were issued. Anecdotal reports show that community care was reduced to a minimum, e.g. for people in need of care living along (Schmidt et al., 2020). As other European countries, Austria also sealed its borders in the early stages of the crisis to all but essential travel. Privately paid live-in domestic assistants of migrant origin were thus either prevented from returning to their countries or locked out of the country. There is no information available on the

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[1] The index covers different domains such as school closures, workplace closures, cancellation of public events, restrictions on public gatherings, stay-at-home requirements and travel controls.

consequences of this measure in terms of unmet or increased care burdens, but in 2019, a total of 66.000 live-in carers (usually working in tandem for a single cared for person) were legally working in Austria (BMASGK 2019). Despite the reliance on care provided by family members, specific support measures targeted at informal carers relied heavily on support from third sector organisations. At federal level, a counselling telephone hotline was installed and regional governments received federal funding to help fund alternative sources of LTC provision where informal carers would drop out (Schmidt et al., 2020).

Nonetheless, at the time of the survey, Austria ranked among the countries with the fewest COVID-19 deaths by in this first wave of the pandemic, with 7.8 deaths per 100.000 inhabitants compared to the EU average of 21.3 deaths per 100.000 inhabitants (Borkovec et al. 2020).

At the time of the survey, Austria had moved towards a less stringent level of controlling the pandemic, as schools had reopened and care homes were open for visitors again (see Schmidt et al. 2020). However, the economic effects of the lockdown were already clearly visible and in the second quarter of 2020, the unemployment rate had risen to 5.7% (from 4.4% in a similar period in 2019) and the number of inactive working age population had more than doubled (Statistik Austria 2020).

Impact of COVID on informal care

There is some evidence at the international level of an increase in the care intensity for informal carers that can be directly linked to the pandemic (Lorenz-Dant 2020). A number of countries have reported a reduction of community services, either in order to protect care recipients from contracting SARS-CoV-2, or due to general regulations to close down certain services for the period of the pandemic (c.f. Carers UK 2020). A qualitative study on informal carers for people with dementia in the UK confirmed that fear of contagion by professional carers led informal caregivers to increase care hours as formal care was discontinued (Giebel et al. 2020). In countries with a high reliance on privately paid live-in domestic assistants – who are mainly migrant carers, such as in Italy, Germany or Austria – the closure of borders added to the shortage of care alternatives (Schmidt et al. 2020; Lorenz-Dant 2020). Migrant carers are particularly relevant to older people with higher care needs, e.g. people with dementia, albeit their users usually herald from higher socio-economic backgrounds (Barbabella et al. 2016, Schmidt 2017).

Concomitantly, informal caregivers reported diminished availability of other family members to provide care, which has also contributed to an overall increase in time spent caring, as evidence from the UK, Australia, Norway and Germany suggests (Maccora et al. 2020; Carers UK 2020; Eurocarers 2020; Rothgang and Wolf-Ostermann 2020). This tightening of caring networks could also arise from contagion fears and social distancing rules that often mandated older people to limit the number of persons with whom they have contact, including non-co-residing relatives. According to a survey among Austrian caregivers of people with dementia, four out of ten caregivers in lower socio-economic groups reported that they stopped receiving help from other family members, and 20 percent no longer received help from neighbours (Volkshilfe 2020). The reduced support within informal caregivers' networks led to higher intensity of care, and in 16 percent of cases resulted in a reduction of paid work. Sporadic support from a larger network of family members in carrying out care tasks such as accompanying older people to medical appointments was reduced during the crisis, resulting in a larger burden for the main caregivers (Volkshilfe 2020; Maccora et al. 2020).

We posit that reductions in access to or take-up of different forms of care may have resulted in a higher intensity of informal caregiving in Austria. The impact on the prevalence of informal care is arguably less straightforward as a result of two counteracting forces at play: tighter caring networkers due to fear of contagion (i.e. lower prevalence) and replacement of discontinued formal care with informal care (i.e. higher prevalence).

Conceptual frameworks such as stress process models (e.g., Aneshensel et al. 1995) and social role theory (e.g., Stephens et al. 2001) put forward a number of factors that associate informal caregiving with increased stress and adverse psychological wellbeing. Chiefly among these factors or stressors are care intensity and care needs of the person cared for, usually referred to as 'care burden' (Schultz and Sherwood 2008, Buyck et al. 2011). Early studies on COVID-19 seem to confirm worsening wellbeing as a result of increased burden as carers step in to fill-in care gaps. In Germany, results from an online survey of informal caregivers showed that health condition worsened for more than half of carers, as did self-assessed quality of life (Rothgang and Wolf-Ostermann 2020). Similar results were found in the UK (Carers UK 2020, Carers Trust 2020), in particular among young adult carers, who reported deteriorating mental health, connectedness and stress. A longitudinal online survey in Austria shows that caregivers facing problems in organising care (i.e. with higher care burden) were significantly less satisfied with their lives than other caregivers (Kalleitner 2020). Due to a reduction in available therapies and rehabilitative services for people in need of care, it may be assumed also that symptoms of people cared for worsened, possibly increasing the burden for family caregivers further (see Volkshilfe 2020).

Other factors known to adversely affect psychological wellbeing are role conflict and lack of time due to multiple caring roles, which is particularly relevant for the 'sandwich generation' (Stephens et al. 2001, Do et al. 2014). The impact of caregiving as an added stress factor is likely to have been particularly strong among certain groups, e.g. carers with childcare responsibilities, due to lockdown measures such as home schooling and the closure of kindergartens. Indeed, early evidence from the US suggests that parents reported greater stress and poorer mental health due to the pandemic (Hamel and Salganicoff 2020). An Australian study of dual-earning couples during COVID-19 showed unpaid care to have gone up, particularly among mothers (Craig and Churchill 2020).

Women and men differ in how they experience stress arising from caregiving. Women are more often the primary caregiver, are more likely to shoulder other unpaid tasks, and have lower financial resources; while men more often characterize informal caregiving as a voluntary choice (Pinquart and Sorenson 2003). Role conflict in relation to employment and negative feelings arising from a 'duty' or 'obligation to care' are also more common in filial care, which is predominantly female, than in spousal care, that involves a significant share of male carers (Pinquart and Sorenson 2011). The strength of the association between caregiving and psychological wellbeing during the pandemic may have therefore been different across gender lines. The previously mentioned US study on parents during the pandemic, for example, found that the probability of experiencing poorer mental health among mothers is nearly twice as high than among fathers (Hamel and Salganicoff 2020). Lockdown measures such as confinement at home and home schooling may exacerbate an unequal division of responsibilities at home (Douglas et al. 2020), which is a key determinant of poor mental health for women (Marchand et al. 2016). Finally, there is early evidence suggesting that unlike in previous economic downturns, women are at a higher risk of losing their jobs or being furloughed during the COVID-19 crisis (Alon et al. 2020), which in turn may compound on their stress and affect their wellbeing (Hilgeman et al. 2009).

We posit that the wellbeing of informal carers may have suffered during the pandemic, particularly among those providing high intensity care. Furthermore, the impact of caregiving as an added stress factor may have been particularly strong among women and those with childcare responsibilities.

Data and Methods

Data

We use data from a representative survey carried out in Austria between 18 June and 2 July 2020. A mixed mode design was applied with 80% of respondents taking part in an online survey (CAWI) whereas 20% were interviewed by telephone (CATI). The sample involved 2,000 respondents (quota sample based on gender, age, education, household size and regions) aged 20-64. The dataset includes post stratification weights that have been constructed using information on gender, age group, education, household size, and region – using auxiliary information from official data to reduce potential sampling errors and non-response bias. The population distributions for the adjustment variables were obtained from the Austrian statistical office. Table 1 presents the descriptive statistics for the weighted sample.

[TABLE 1 HERE]

Dependent variable

The dependent variable for the multivariate analysis is psychological wellbeing, measured using a variant of the CES-D scale comprised of 8 items of self-reported symptoms associated with depression. Respondents were asked about the frequency at which they experienced each feeling in the previous week, using on four item response scale (see Table 2 for original questions used and response options). These 8 items were summed to create an additive index (Cronbach's alpha of 0.85), with a score of 20 or higher determining the threshold for depression (Vilagut et al. 2016).

Care variables

Informal care – defined as providing informal care to frail or disabled family members, friends or neighbours (but excluding care related to a paid job) either inside or outside the household – is assessed in the survey in relation to two moments in time: retrospectively in relation to February 2020, before the coronavirus crisis, as well as at the time of the survey (June/July 2020). This question is used to define two grouping variables used in the analysis. One is a dichotomous variable for being an informal carer during the COVID-19 crisis and another is a categorical variable defining four subgroups in the sample: non-carers throughout, continuous carers, those that began caring only during the coronavirus crisis, and those that had previously provided care but stopped caring during the crisis.

Variables on care intensity are constructed based on information about the average weekly number of informal care hours provided: a dummy variable for intense caregiving during the pandemic (i.e. more than 20 weekly hours of care) and a categorical variable for the change in informal care hours (no change, increases or decreases by less than hours or by at least 10 hours).We also use information on whether the cared for person received formal care services prior to the pandemic; and whether or not these care services changed as a result of the pandemic.

Crisis-related variables

Crisis-specific variables include information on whether or not an individual is concerned about securing safe care for relatives in need of care and whether an individual's biggest concern with the COVID-19 crisis are the associated health risks. Two measures of stressors are also included, specifically, financial worry as a result of the pandemic (assessed using an 11-point scale, with worry defined as 6 or higher) and changes in the employment situation. The latter is coded as 'improved' if the individual was not employed prior to the pandemic but has been employed at the time of the survey, or if s/he was in furlough, employed part-time or self-employed before the pandemic and is now in full-time employment; while it is coded as 'deteriorated' if the individual was employed before the pandemic but has not been employed at the time of the survey, in furlough, employed part-time or self-employed; and 'remained the same' if no changes occurred.

Socio-demographic variables

Socio-demographic information included age, gender, education level (ISCED 2011), self-reported ability to meet financial needs, household size, foreign-born status and a categorical variable on the age of youngest child. Categories of the latter include: between 0 and 6 years old, between 7 and 17, 18+ or having no children or no co-residing children (without children, for short).

[TABLE 2 HERE]

Methods

Bivariate analysis employing F-statistics and post hoc tests are used to discern associations between the four subgroups of the population (carers and non-carers) and a selection of explanatory and socio-demographic variables. To estimate the association of caregiving with depression in comparison to non-carers, as well as the association of specific caregiving factors amongst carers only (i.e. intensity of caring, change in hours) we use logistic regression on which average marginal effects (AMEs) or contrasts of predictive margins for each dependent variable are estimated. To determine if caregiving during the pandemic has stronger effects on the probability of depression within specific groups, further analyses are carried out for subgroups of the sample by estimating AMEs for the interaction between gender and age of the youngest child. The analyses were performed with Stata 15.0 statistical software.

Results

The initial analysis of the prevalence of care before and during the pandemic indicated persistence in the prevalence of informal care among the Austrian working-age population. The share of informal carers remained rather stable (12.8% and 14.0% respectively, weighted data). These figures amount to an estimated 705 thousand individuals providing informal care before the start of the pandemic and about 767 thousand in June/July 2020 (hence, an increase by about 62 thousand individuals, 55% of whom were women). This relative stability may mask a re-composition of carers or a changing profile of caregiving (e.g. through changes in intensity). We thus compared the profile of four different groups: non-carers throughout, continuous carers, non-carers who started to care only during the pandemic and previous carers who had stopped caring about three months after its onset (Table 3).

[TABLE 3 HERE]

Results from the F-tests showed statistically significant differences across the four groups on socio-demographic, education and employment variables. The pairwise comparison between single categories confirmed that most of these statistically significant differences were between non-carers and continuous carers and had the expected sign according to the literature. Continuous carers were on average older (in the age range until 64 years included in the sample), more likely to be women, less likely to have younger children (0-6) and more likely not to have children and less likely to be employed full-time than non-carers.

In comparison to continuous carers, those who started caring were more educated, had a more gender-balanced profile, a higher probability that their labour market situation had deteriorated due to the crisis and the persons they cared for were less likely to have received services before the start of the pandemic. The lack of statistical significance for many of the differences observed for those who started or stopped caring may be explained by the low overall sample size of these groups. Both continuous carers and those who started caring were more prone than non-carers to express worry that the care needs of their relatives would go unmet during the pandemic. While continuous carers expressed greater concerns with health related to the pandemic than non-carers, those who started providing informal care in the pandemic did not significantly diverge from non-carers in this respect.

Those who stopped caring during the pandemic were the most gender-balanced group. They had a higher probability of having seen their labour market situation deteriorate and were the most likely to express having a lower income due to the crisis. For more than half of those who stopped caring, the cared-for person had received services before the crisis, which is a significantly larger share than in the two other groups of carers. Concerns with health related to the pandemic did not seem to explain the decision to stop caring as they were not more likely than non-carers to express this concern. Those who stopped caring, however, were the smallest group in our sample and differences were seldom statistically significant.

Regarding intensity, continuous carers were more likely to care for at least 20 hours per week than those who either stopped or started to care during the pandemic. The average number of hours of care provided prior to and during the crisis by continuous carers remained the same (15.7 hours versus 15.5). The majority of continuous carers did not change their care intensity (55%), but 27% increased their hours while 17% reduced their care hours. Continuous carers who increased their hours did so on average by about 6 hours, while those who reduced their hours did so by 11.2 hours. Both those who stopped and those who started to care during the crisis provided less than 10 hours of care per week, on average (Figure 1). Those who stopped caring tended to provide slightly more care prior to the pandemic (10.8 hours), compared to those who started caring during the pandemic (6.8 hours). Among those reporting the cared for person received care services before the pandemic (N=105), only 25% reported a cessation or decrease in the provision of services – sample size precludes any analysis of the association of these changes to type of caregivers.

[FIGURE 1 HERE]

Next, we turn our attention to the wellbeing of informal carers in Austria during the pandemic. Table 4 presents the AMEs for psychological wellbeing for the pooled sample of carers during the crisis and non-carers. Informal caregiving during the pandemic has been significantly and positively associated with poor psychological wellbeing (Model 1). Being a carer about three months after the onset of the pandemic corresponded with a nearly 7 per cent higher probability of reporting poor psychological well-being (who attained a score on the CESD scale that is indicative of a high risk of depression). This association remains significant and the size of the effect is even strengthened after controlling for a number of socio-demographic variables (Model 2) and COVID-19-crisis-related stressors (Model 3). As a reference, prevalence of depression among non-carers during the crisis was 38.8% while for carers it was 45% ($p=0.034$).

[TABLE 4 HERE]

Table 5 presents the determinants of psychological wellbeing for carers only, focusing on changes in the intensity of caregiving. Model 1 suggests that changes to care intensity during the pandemic had no statistically significant association with psychological wellbeing (Model 1). Once socio-demographic differences are controlled for (Model 2), increasing care intensity by up to 9 hours showed a positive and significant association with poor psychological wellbeing, although this association did not hold once crisis-related stressors, in particular financial worry, were added (Model 3). In the models with larger sets of controls (Models 2 and 3), starting to care during the pandemic and previously receiving care services had no significant association with carers' psychological wellbeing. High intensity care during the pandemic (i.e. 20 hours per week or more) was significantly and positively associated with poor psychological wellbeing, and its effect was indeed sizeable. Providing more than 20 hours of informal care per week increased the probability of depression by nearly 28 per cent (Model 3).

[TABLE 5 HERE]

Finally, the effect of caregiving during the COVID-19 crisis on psychological wellbeing is tested for a number of sub-groups of carers. Table 6 presents the AMEs for the first and second differences for the interaction of informal caregiving with gender and having younger children in the household. Results are presented for the unadjusted model (Model 1) and the one with all the co-variates (Model 3). Informal caregiving during the COVID-19 crisis had no significant impact on the psychological wellbeing ($p<0.05$) for either men or women (first differences). There was also no significant difference of this effect between men and women (second differences). Informal caregiving during COVID-19 is thus no more likely to impact the psychological wellbeing of women than men. For those without children, informal caregiving during the COVID-19 crisis was significantly and positively associated with depression after controlling for confounders (Model 3) (first differences). Informal caregiving during COVID-19 had no impact on those with younger children (0-6 years old) or older children (7-17 years old). The second differences are not statistically significant for any group in relation to children.

[TABLE 6 HERE]

Discussion and conclusions

Our findings suggest that the prevalence rate of informal care remained stable during the first wave of the pandemic in Austria. However, disaggregating carers according to changes in caregiving during the pandemic revealed that those who started to care during the pandemic did so for persons who previously did not receive care services, and mostly provided low intensity care (an average of 6.8 weekly hours). They were also more educated and nearly as likely to be men as women. These ‘new’ informal carers fit the profile of *sporadic carers* providing help with household tasks (e.g. groceries, collecting medicines) to frail or disabled people who were relatively autonomous and probably remained in self-isolation, rather than stepping in for discontinued formal care. A further potential motive for initiating care may be explained by a worry about unmet needs of relatives, which was at a comparable level with continuous carers. Those who stopped caring during the pandemic had mostly provided low intensity care to people who received formal care before the onset of the pandemic This profile is compatible with the tightening of care networks observed during the pandemic (Volkshilfe 2020; Maccora et al. 2020). Ceasing to care was not apparently motivated by health concerns related to the pandemic or financial difficulties (those who stopped caring were the least worried about financial problems). These carers had the worst average psychological wellbeing of any group, therefore ceasing to care may have been motivated by health reasons. In this case, being able to rely on care services may have served as a buffer for carers who stopped caregiving during the crisis as they were no more likely than other carers to fear unmet needs of relatives.

We find no evidence that the intensity of informal care has increased during the pandemic in Austria. Those who stopped and started to care during the pandemic did not significantly differ in their care intensity. Among continuous carers, mean intensity remained the same before and after the onset of the pandemic. A greater share of continuous carers increased intensity compared to the new carers, but mostly at the margins (i.e. variations below 10 hours). This corroborates other findings that suggest a greater number of informal carers increased their hours, e.g. by stepping in for other carers (Volkshilfe 2020). Decreases in intensity among continuous carers were more sporadic (i.e. fewer) but on average with larger changes in hours, suggesting that those who diminished their care hours may have done so in response to competing caring obligations arising from the lockdown.

Caregiving during the COVID-19 pandemic was associated with poorer psychological outcomes, even after controlling for crisis-related changes. Although this is an association that has been systematically found elsewhere in the literature (Pinquart and Sorenson 2003, Ho et al. 2009), the pandemic may have contributed to the care burden, not least by increasing the concerns related to health (e.g. contagion and health of relatives), or financial worry – both were higher among carers during the crisis. However, we could not conclude that caregiving during the coronavirus crisis placed a particular psychological strain on women, in comparison to men. We also found that caregiving was associated with worse outcomes for those without children or whose children were already adult or outside the household, but not for those with non-adult children in the household. The literature on the ‘sandwich generation’ is limited, but available evidence and social role theory do suggest that a (lack of) time and role conflict regarding employment are key determinants of psychological strain for this group of carers (Stephens et al. 2001, Do et al. 2014). The pandemic caused a marked increase in unemployment and the implementation of a furlough (Kurzarbeit) scheme that at its height covered one third of the workforce in Austria (Böheim and Leoni 2020). The short term effect of these changes may have resulted in increased time for unpaid activities, thus temporarily contributing to ease stress. Other studies on the social implications of the pandemic have found improved family relationships during the lockdown (Power 2020), in itself a key determinant of psychological wellbeing of carers, that could have offset the caregiving strain (Pinquart and Sorenson 2011). The lockdown measures in Austria were stringent but limited in duration, and had been considerably eased at the time of the survey. As schools and kindergartens reopened, this might have also eased the competing caring obligations for these carers. Finally, lockdown measures are likely to have increased isolation and this may have been felt more particularly by informal carers without children (Carers UK 2020, Carers Trust 2020). The survey did not collect information on frequency of other contacts, so this is an aspect to be investigated by further research.

As for changes in the intensity of informal care brought by the pandemic, these had mostly no effect on psychological wellbeing once COVID-19-specific stressors were considered, including change in employment situation. Increased time for unpaid care derived from job loss or furlough may explain this finding. As in other studies prior to the pandemic, care intensity was significantly associated with poor psychological outcomes (Buyck et al. 2011, Vlachantoni et al. 2013).

There are a number of caveats to consider. This is a cross-sectional survey and it is not possible to establish causality or compare certain outcomes (e.g. psychological wellbeing) with the *ex-ante* situation. To partially circumvent this, we included retrospective questions on pre-COVID-19, which sets this survey apart from data collected only in reference to after/ during the pandemic. Given the short time since the outbreak of COVID-19, recall bias is likely to be limited. Finally, while we can observe changes in informal caregiving, we cannot ascertain whether these changes cover all care gaps or result in unmet needs for the care receiver.

From a policy standpoint, the findings confirm the vulnerability of carers to depression during the pandemic, which calls for support services specifically targeting carers to be enacted. Carers are more likely to experience deteriorating employment conditions and to worry about the financial consequences of the crisis. While the Austrian cash-for-care benefit (Pflegegeld) may be used as a ‚routed wage‘, the lack of specific measures of income support may put carers at a heightened risk of poverty. Their caring responsibilities may also place them at a disadvantage in returning to the labour market. The crisis may thus have a greater scarring effect on their long-term income perspectives (Alon et al. 2020).

With a second wave of COVID-19 already underway, this study provides pointers to researchers and policy-makers alike on the impact of the crisis on the wellbeing of informal carers. It also sheds light on informal carers, which will be crucial to maintain older people safe and protected during the course of this pandemic.

Table 1: Sample description

Variable	Total (N=2000)	Non-carers during COVID-19 crisis (N=1722)	Carers during COVID-19 crisis (N=278)
	% (mean)	% (mean)	% (mean)
Gender			
Women	47.58	46.20	56.07
Men	52.42	53.80	43.93
Age (mean)	(42.35)	(41.75)	(46.0)
20-29	20.28	21.15	14.91
30-39	22.27	23.09	17.23
40-49	22.69	23.65	16.78
50-59	25.92	24.17	36.67
60-64	8.84	7.93	14.42
Youngest child			
0-6	16.97	17.85	11.61
7-18	24.36	24.64	22.66
18+/no children	58.67	57.52	65.74
Education			
Primary	47.44	48.54	40.68
Secondary	32.42	31.36	38.92
Tertiary	20.14	20.10	20.40
Birth country			
Austria	89.27	88.44	94.35
Foreign-born	10.73	11.56	5.65
Household size	(2.76)	(2.78)	(2.65)
Employment			
Full-time	38.57	40.00	29.77
Part-time	14.45	14.35	15.08
Furlough	12.95	12.93	13.07
Self-employed	6.85	6.86	6.83
Leave	1.83	1.89	1.45
Education	3.32	3.11	4.64
Unemployed	8.41	7.89	11.55
Inactive	13.63	12.98	17.61
Income situation			
Comfortably living	33.36	32.74	37.14
Managing	45.06	46.96	33.50
Difficult to manage	15.50	14.45	21.85
Very difficult to manage	6.07	5.84	7.50
Change in employment due to crisis			
No change	78.75	79.39	74.83
Deterioration	18.55	17.79	23.24
Improvement	2.69	2.82	1.93
Financial worries	41.48	40.97	44.60
Depression	39.66	38.80	44.97

Weighted results.

Table 2: Original questions used to construct variables for the analysis (own translation)

Variable	Question	Responses
Carer before/during pandemic	Do you spend any time looking after or giving help to chronically ill, disabled or old and care-dependent family members, friends or neighbours? How was it before the start of the Corona crisis and how is it now? Please do not count anything you do as part of your paid employment.	Yes, around ___ hours per week. No
CES-D (Depression)	How often in the last week have you felt… (depressed, unhappy, lonely, sad, isolated or excluded, restless sleep, enjoyed life)	Never or almost never (1), sometimes (2), often (3), always or almost always (4). Depression defined as ∑score 20+.
Person cared for received formal care services prior to pandemic	Did this person before the coronavirus crisis receive one or more of the following care services: professional care (i.e. mobile care service), 24-hour care, paid household work, or meal on wheels?	Yes/no
Changes in care services	Has the extent of these care services changed due to the Corona crisis?	Yes, the person receives more care services, yes the person receives less/ no care services, no they've remained the same, no but the care situation has changed for other reasons
Worried about finding safe care for cared for person	How worried are you that you don't have safe care for your care-dependent relatives due to the coronavirus crisis?	Scale from 0 (no worries) to 10 (very worried). Care worries defined as 6+.
Financial worries	How worried are you that you will have financial problems due to the coronavirus crisis?	Scale from 0 (no worries) to 10 (very worried). Financial worries defined as 6+.
Concerned about health risks of COVID-19 crisis	What personally worries you more at this time?	I worry more about the health risks of the corona crisis than the economic consequences, I worry more about the economic consequences of the crisis than the health risks, or I am not worried about the health risks or the economic consequences of the corona crisis.
Employment situation in February 2020 and now	How was your employment situation before the start of the Corona crisis in February 2020 in comparison to now? Please choose what you mainly did at these two time points.	Responses: full-time employed, part-time employed, self-employed, furloughed, on parental-leave, farmer, in education, unemployed, inactive.
Income situation	How would you assess the income situation of your household? With the current household income, I/we…	Live comfortably, manage, have difficulties coping, have a lot of difficulties coping.
Household size and composition	Can you please tell us how old the other people in your household are, as well as their sex and relationship to you?	

Table 3: Bivariate analysis of caregiving status and selected variables

Variable	Non-carers throughout (a)	Continuous carers (b)	Started caring (c)	Stopped caring (d)	F-test	Post-hoc test
N	1696	237	41	26		
	% (mean)	% (mean)	% (mean)	% (mean)	*p*	
Mean age (20-64)	(41.72)	(46.17)	(45.15)	(44.01)	***	b>a (***)
Women	46.12	56.71	52.82	51.7	*	b>a (**)
Youngest child						
0-6	17.90	12.60	6.58	13.97	**	a>b (**)
7-17	24.61	22.27	24.62	26.68		-
18+/no children	57.49	65.13	68.80	59.36	***	b>a (**)
High-school diploma or higher	37.75	38.48	59.06	47.61		
Employment						
Full-time	40.09	30.26	27.29	32.87		-
Part-time	14.44	15.95	10.63	7.29		-
Furlough	12.83	11.62	20.38	19.99		-
Income situation						
Comfortable	32.38	36.17	42.06	38.06		-
Managing	46.70	34.51	28.41	35.66		a>b (*)
Difficult/very difficult	20.03	29.32	29.53	26.28		-
Change in employment						
No change	79.51	77.69	60.34	70.68		-
Deterioration	17.63	20.79	35.66	29.32		-
Improvement	2.86	1.52	4.00	0		-
Change in income						
No change	74.92	68.83	66.26	54.94		-
Less income	22.61	29.91	33.74	42.11		-
More income	2.47	1.95	0	2.95		-
Care worries (i.e. unmet needs of relatives)	21.53	41.34	35.20	33.75	***	b>a (***) c>a (**)
Financial worries	40.77	45.01	42.51	55.76		-
Worried about health risks	29.13	37.17	32.12	31.23	*	b>a (**)
Depression	38.57	46.26	38.22	56.49		-
Carers before and during the crisis (n=304)						
	Total	Continuous carers (a)	Started caring (b)	Stopped caring (c)	*F-test*	Post-hoc test
Intense care (>20 hrs) before crisis	19.76	20.78	n.a.	9.56		-
Intense care (>20 hrs) after crisis	18.24	20.41	7.22	n.a.	*	a>b (*)
Received services before crisis	34.87	36.07	17.57	57.07	*	c>b (*)
Average hours during crisis	(14.1)	(15.5)	(6.8)	n.a.	*	a>b (*)
Average change in hours [a]	(.038)	(-0.21)	(6.78)	(-10.8)	***	c>a (***)

*p<0.05; **p<0.01;*** p<0.001

[a] Average change in hours have been compared as absolute values. Weighted results.

Figure 1: Distribution of informal care hours by continuous carers, carers that stopped and started to care during the COVID-19 crisis

Continuous carers

Carers that stopped and carers that started caring

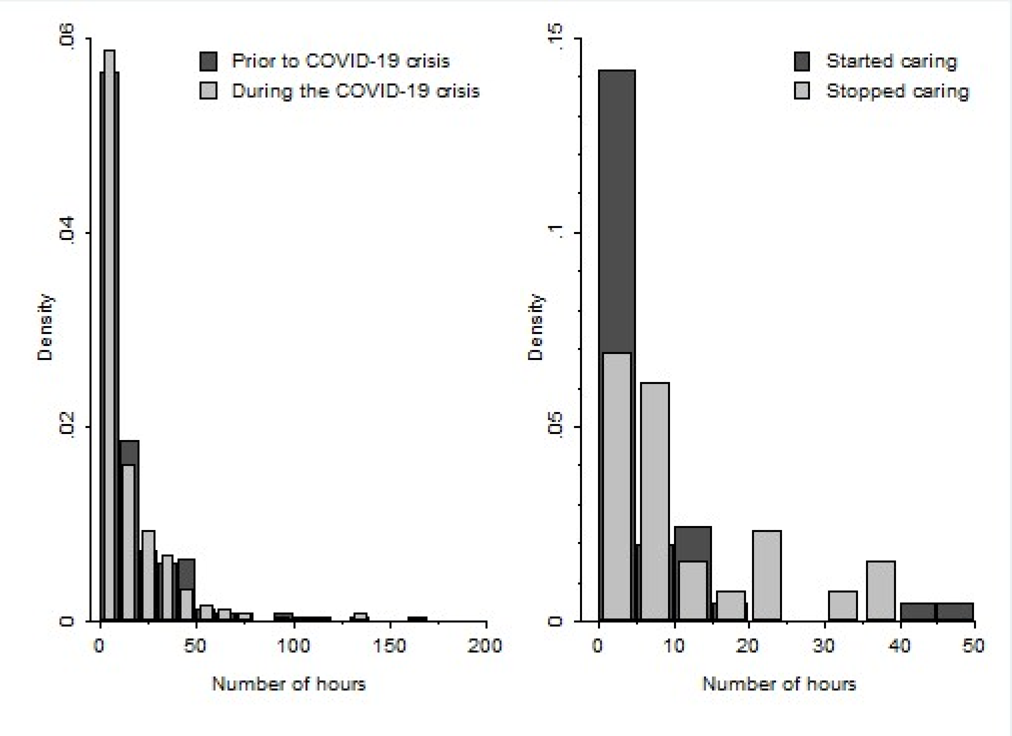

Table 4: Psychological wellbeing and caring during the pandemic (dependent variable: CES-D score≥ 20)

Variable	Model 1			Model 2			Model 3		
	AME	SE	*p*	AME	SE	*p*	AME	SE	*p*
Caring during pandemic	0.068	(0.032)	*	0.082	(0.031)	*	0.074	(0.030)	*
Age (Baseline: 20-29 ys)									
30-39 ys				-0.071	(0.035)	*	-0.075	(0.035)	*
40-49 ys				-0.120	(0.036)	**	-0.126	(0.036)	***
50-59 ys				-0.120	(0.036)	**	-0.116	(0.036)	**
60-64 ys				-0.298	(0.044)	***	-0.285	(0.045)	***
Sex (Baseline: Men)									
Women				0.046	(0.023)	*	0.040	(0.022)	
Foreign-born				0.184	(0.036)	***	0.179	(0.036)	***
Education (Baseline: Primary)									
Secondary				-0.037	(0.024)		-0.034	(0.024)	
Tertiary				-0.023	(0.030)		-0.020	(0.029)	
Household size				-0.025	(0.010)	*	-0.026	(0.010)	**
Age of youngest child (Baseline: No children/older than 18									
Child <7				0.030	(0.036)		0.024	(0.035)	
Child 7-18				0.027	(0.033)		0.026	(0.033)	
Employment (Baseline: Full-time)									
Furlough				0.016	(0.034)		-0.067	(0.058)	
Part-time				-0.009	(0.032)		-0.005	(0.032)	
Self-employed				-0.007	(0.043)		-0.026	(0.042)	
Leave				-0.061	(0.060)		-0.070	(0.060)	
Education				0.061	(0.079)		0.091	(0.078)	
Unemployed				0.088	(0.044)	*	0.045	(0.048)	
Inactive				0.126	(0.040)	**	0.119	(0.040)	**
Income Situation (Baseline: Comfortably living)									
Managing				0.155	(0.024)	***	0.107	(0.026)	***
Difficulties getting by				0.278	(0.034)	***	0.165	(0.038)	***
Lots of difficulties				0.463	(0.048)	***	0.343	(0.055)	***
Financial worries							0.167	(0.025)	***
Change in Employment (Baseline: No change)									
Deterioration							0.075	(0.055)	
Improvement							0.036	(0.064)	
Observations	1,935			1,922			1,922		

Sample: Austrian working age population (age 20-64). Shown are average marginal effects (AME) from a logistic regression analysis. *p<0.05; **p<0.01;*** p<0.001

Table 5: Psychological wellbeing and informal care-related factors (dependent variable: CES-D score≥20).

Variable	Model 1			Model 2			Model 3		
	AME	SE	*P*	AME	SE	*p*	AME	SE	*p*
Change in hours (Baseline: no change)									
Increase (1-9hr)	0.0952	(0.069)		0.146	(0.065)	*	0.109	(0.064)	
Increase (>=10hr)	0.119	(0.120)		-0.070	(0.096)		-0.064	(0.094)	
Decrease (1-9hr)	0.141	(0.113)		0.142	(0.106)		0.129	(0.103)	
Decrease (>=10hr)	0.262	(0.135)		0.191	(0.129)		0.136	(0.126)	
Started caring				-0.027	(0.082)		-0.035	(0.077)	
Intense care (>20hrs)				0.321	(0.075)	***	0.286	(0.078)	***
Cared for person used care services before COVID-19				0.074	(0.057)		0.037	(0.055)	
Age (Baseline: 20-29 ys)									
30-39 ys				-0.059	(0.126)		-0.025	(0.117)	
40-49 ys				-0.085	(0.123)		-0.007	(0.117)	
50-59 ys				-0.146	(0.118)		-0.124	(0.110)	
60-64 ys				-0.303	(0.140)	*	-0.229	(0.135)	
Sex (Baseline: Men)									
Women				0.083	(0.055)		0.0807	(0.052)	
Foreign born				0.048	(0.140)		-0.000	(0.127)	
Education (Baseline: Primary)									
Secondary				-0.101	(0.060)		-0.096	(0.059)	
Tertiary				-0.152	(0.073)	*	-0.138	(0.070)	
Household size				-0.032	(0.022)		-0.026	(0.022)	
Age of youngest child (Baseline: No children/older than 18									
Child <7				-0.014	(0.099)		-0.021	(0.097)	
Child 7-18				-0.021	(0.082)		-0.051	(0.079)	
Employment (Baseline: Full-time)									
Furlough				0.055	(0.108)		-0.076	(0.141)	
Part-time				-0.059	(0.082)		-0.084	(0.079)	
Self-employed				0.216	(0.102)	*	0.168	(0.103)	
Leave				-0.323	(0.111)	**	-0.272	(0.164)	
Education				-0.027	(0.152)		0.043	(0.151)	
Unemployed				0.234	(0.109)	*	0.098	(0.123)	
Inactive				-0.011	(0.092)		-0.064	(0.088)	
Income Situation (Baseline: Comfortably living)									
Managing				0.099	(0.067)		0.013	(0.065)	
Difficulties getting by				0.252	(0.085)	**	0.039	(0.087)	
Lots of difficulties				0.439	(0.149)	**	0.260	(0.164)	
Financial worries							0.288	(0.068)	***
Change in Employment (Baseline: No change)									
Deterioration							0.156	(0.130)	
Improvement							0.134	(0.222)	
Observations	267			267			267		

Sample: Informal carers at time of interview aged 20-64. Shown are average marginal effects (AME) from a logistic regression analysis. *p<0.05; **p<0.01;*** p<0.001

Table 6: First and second differences of AMEs (SE) of interaction of gender and youngest child with being a carer during the pandemic (dependent variable: CES-D score ≥ 20).

Gender

Interaction term	Model 1		Model 3	
	Unadjusted		Adjusted	
	1st diff	2nd diff	1st diff	2nd diff
Men	0.0832 (0.0502)	-0.0386 (0.0662)	0.0834 (0.0499)	-0.0122 (0.0632)
Women	0.0446 (0.0431)		0.0712 (0.0429)	

Youngest child

Interaction term	Model 1			Model 3			
	Unadjusted			Adjusted			
	1st diff		2nd diff		1st diff		2nd diff
No children or 18+	0.0601 (0.0413)	No children/18+ vs. child <7	0.0202 (0.0924)	No children or 18+	0.0826* (0.0417)	No children/18+ vs. child <7	-0.0173 (0.0865)
Child <7	0.0804 (0.0827)	Child <7 vs. child 7-18	0.0228 (0.108)	Child <7	0.0652 (0.0773)	Child <7 vs. child 7-18	0.00948 (0.102)
Child 7-18	0.103 (0.0702)	No children/18+ vs. child 7-18	0.0431 (0.0815)	Child 7-18	0.0747 (0.0690)	No children/18+ vs. child 7-18	-0.00787 (0.0783)

Model 3 (Adjusted) includes the same controls used for model 3 in Table 4. *p<0.05; **p<0.01;*** p<0.001

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