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Themed Section

## The Effects of Severe Acute Respiratory Syndrome Coronavirus 2 on the Reported Mental Health Symptoms of Nonprofessional Carers: An Analysis Across Europe

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### ABSTRACT

**Objectives:** This study tries to analyze how the crisis generated by severe acute respiratory syndrome coronavirus 2 has affected the reported mental health symptoms of informal caregivers in different European countries.

**Methods:** The Survey of Health, Ageing and Retirement in Europe-COVID-19 was used, collecting information from the beginning of June 2020 to August 2020 about individuals' state of health and the care they received. Several probit regression models were used to analyze the differences in the probability of (1) being sad or depressed, (2) being anxious or nervous, (3) having difficulty sleeping, and (4) feeling lonely, between individuals who provided informal care and individuals who did not. Several subanalyses by geographic area, mortality rates due to coronavirus disease 2019 (COVID-19), and long-term care expenditure were also performed.

**Results:** Since the outbreak of COVID-19, informal caregivers have had a higher probability of being sad or depressed of 8 percentage points (p.p.), a 7.1 p.p. higher probability of being anxious or nervous, and a 5.9 p.p. higher probability of having difficulty sleeping than non-caregivers. Informal caregivers in Southern Europe have had an 8 p.p. higher probability of being sad or depressed than non-caregivers. In Eastern Europe, this difference in probability reaches 9.7 p.p. Finally, in countries with higher mortality rates due to COVID-19, there have been greater differences in terms of being sad or depressed between caregivers and non-caregivers, regardless of expenditure on long-term care.

**Conclusions:** Since the outbreak of COVID-19, informal caregivers in Europe have had a higher probability of reporting mental health symptoms than non-caregivers.

**Keywords:** COVID-19, Europe, informal caregivers, mental health symptoms, nonprofessional caregivers, severe acute respiratory syndrome coronavirus 2.

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### Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been one of the greatest challenges to public health in decades. At the time of writing (February 1, 2021), according to the World Health Organization,<sup>1</sup> 102 million confirmed cases of coronavirus disease 2019 (COVID-19) have been recorded so far and 2.2 million people have died in a period of <1 year (March 2020 to January 2020). At the moment, we are experiencing a third wave of increase in the accumulated incidence, and Europe is one of the epicenters of the pandemic. Nevertheless, there are wide variations in incidence between the different European countries.

Apart from the death toll, SARS-CoV-2 is responsible for causing another series of serious health disorders. One of the most relevant is the impact on the mental health of the population because the virus has caused a strong increase in stress among the population, which is a very serious risk for mental health. In fact,

we can point to 3 different ways in which this risk has been produced or intensified. In the first place, the virus has changed our day-to-day lives, generating a sense of lack of control over our routines and plunging us into great uncertainty about the immediate future.<sup>2-5</sup> Second, the "social distance" measures implemented by the governments of most countries to prevent the spread of the virus, including the restriction of movements and house confinements, have limited our interpersonal interactions. Thereby, these measures involve an additional burden on the mental health of the population.<sup>6</sup> Third, the economic crisis that accompanies the spread of the virus and the measures already mentioned are additional sources of stress for many families. The literature describing the effects of the recent Great Recession on people's health warns us that there is strong evidence of the relationship between economic crises and declining mental health.<sup>7-12</sup> Several recently published works have already pointed towards a deterioration in the mental health of the general

population<sup>4,13-16</sup> and of particular groups, such as healthcare workers.<sup>17-23</sup>

The virus has also resulted in serious overloading in healthcare services worldwide.<sup>24,25</sup> This can have unwanted consequences such as delays, lack of continuity of care for people who have already experienced some type of mental disorder, and organizational changes in mental health services.<sup>26-29</sup>

One of the groups most affected by the pandemic is the population that receives care in nursing homes. The figures are conclusive: in many countries, most deaths have occurred in the population living in this type of facilities.<sup>30</sup> Moreover, the workers in these care homes also constitute a group at risk of contagion, to the same extent as the medical staff of a hospital.<sup>31,32</sup> Nevertheless, a very important part of the care received by people with limited autonomy takes place within their homes and is mainly provided by nonprofessional caregivers (informal caregivers).

The support received by nonprofessional caregivers was extraordinarily heterogeneous in Europe before the arrival of SARS-COV-2. The investments made by each country in its long-term care (LTC) system, measured as a percentage of the gross domestic product, were as different as the organizational aspects of the systems and as the level of consideration for and support provided to informal caregivers.<sup>33-37</sup> During the first few months after the arrival of COVID-19, many countries offered various kinds of guidance and resource documents oriented to supporting the non-professional home caregivers. Nevertheless, it is very difficult to know the degree of their usefulness and the extent to which caregivers have received resources to meet their needs and help them carry out their work.<sup>38</sup> We have far less information about home care and non-professional care than about the situation in nursing homes. In fact, informal caregivers have been identified as “the forgotten healthcare workers during the COVID-19 pandemic.”<sup>39</sup> Then, this study tries to fill one of the gaps in the information about non-professional caregivers in the first months of the crisis generated by SARS-COV-2, by analyzing how their mental health has been affected throughout Europe.

## Methods

### Data

The Survey of Health, Ageing and Retirement in Europe (SHARE) is a longitudinal survey that includes detailed information about 120 000 people, aged  $\geq 50$  years, in 27 European countries plus Israel, from the period 2006 to 2017. Nevertheless, due to the situation caused by COVID-19 in Europe, SHARE started the fieldwork for a SHARE-COVID19 survey, collecting information from the beginning of June 2020 to August 2020.<sup>40</sup> The sample was composed of 52 310 individuals. Nevertheless, even though SHARE is a longitudinal survey, the number of individuals who are collected in this special SHARE-COVID19 survey who are followed up for, at least, 2 moments in time (before and during the pandemic) is low (<3% both for the overall and the informal caregivers' samples). Therefore, the data cannot be treated as longitudinal.

The information collected was related to state of health, health behavior, mental health before and after the COVID-19 outbreak, infections, healthcare and non-healthcare use, and changes in employment status, in the economic situation, and in social networks during the COVID-19 pandemic.

The questionnaire is publicly available at <http://www.share-project.org/data-documentation/questionnaires/corona-questionnaire.html>.

### Main Variables Used

To define informal caregivers, the answers to the following question were used: “Since the outbreak of Corona, did you provide personal care to others (family or friends) outside your home?”. If the answer was “Yes,” this individual was identified as an informal caregiver. Hence, throughout the article, when reading informal caregivers, we refer to informal caregivers providing care outside their homes.

To discover whether or not the individuals had reported any of the mental symptoms considered, we collected information about whether or not they had been sad or depressed, anxious, or nervous and whether they had difficulty sleeping or had felt lonely during the month immediately preceding the survey.

### Statistical Analysis

The main aim of the statistical analysis was to analyze the differences in the probability of reported mental health symptoms between informal caregivers and non-caregivers. More precisely, the analysis studied the differences in the probability of (1) being sad or depressed, (2) being anxious or nervous, (3) having difficulty sleeping, and (4) feeling lonely between individuals who provided informal caregiving and individuals who did not. Thus, we used several probit regression models where the dependent variable was assigned a value of “1” if the person was reported to have had any of the aforementioned mental symptoms and “0” otherwise.

The specification of the model was as follows:

$$\text{prob}_i(\text{mental health symptoms}_j) = \Phi(\alpha_1 - \beta'_1 X_i - \varepsilon_i)$$

$$\text{prob}_i(\text{mental health symptoms}_j) = \Phi\left(\alpha_j - \beta'_j X_i\right) - \Phi\left(\alpha_{j-1} - \beta'_{j-1} X_i\right) - \varepsilon_i,$$

$$j = 2, \dots, j - 1 \text{prob}_i(\text{mental health symptoms } j) =$$

$$1 - \sum_{j=1}^{j-1} \text{prob}_i(\text{mental health symptoms } j)$$

where  $\text{prob}_i(\text{mental health symptoms } j)$  is the probability that subject  $i$  ( $i = 1, \dots, I$ ) has reported a mental health symptom where  $j = 1$  (being sad or depressed), 2 (being anxious or nervous), 3 (having had difficulty sleeping), and 4 (feeling lonely).  $\Phi$  denotes the standard normal density function with values ranging between zero and one;  $X_i$  represents the vector of explanatory variables, which were, in model 1, the individual's age and its square, sex, years of education, whether people had financial difficulties and experienced major illness or health conditions, and whether a close relative had died due to COVID-19. In model 2, the country dummies were also added, and in model 3, the country dummies were replaced by geographical area (North, Center, South, and East),  $\beta$  is the vector of coefficients parameters assigned to each explanatory variable included in the vector  $X'$ , and  $\varepsilon_i$  is the standard error. All the estimations performed were nested by country-level factors by clustering standard errors at country level.

Given that the differences in the probability of reported mental health symptoms between informal caregivers and non-caregivers might be affected by other important factors such as the intensity of the pandemic and by the type of LTC systems in each country, 2 different subanalyses were performed. On the one hand, we performed the analysis by geographic area (North, Center, South, and East). By this method, it would be possible to assess whether the differences in mental health between caregivers and non-caregivers depended on the area considered and also whether these

differences were greater or lesser depending on the geographic area. On the other hand, we also performed the analysis by considering whether the country in which the individuals lived had high, moderate, or low mortality rates due to COVID-19 and also considering whether the country in which the individuals lived had high, moderate, or low public expenditure on LTC.<sup>41</sup> To do this, the mortality rate due to COVID-19 in each country included in the analysis was calculated taking into account both the accumulated deaths caused by COVID-19 in each country at week 53 of the year 2020 and the total population of each country in 2019 (last data available)<sup>42</sup> (for more information, see [Appendix Table 1](#) in Supplemental Materials found at <https://doi.org/10.1016/j.jval.2021.10.011>). This would show whether the intensity of the pandemic or the public LTC expenditure of each country altered the differences in mental health symptoms reported between caregivers and non-caregivers.

## Results

### Descriptive Analysis

Since the outbreak of COVID-19, 1727 individuals in the survey in Europe have reported that they have provided informal caregiving (out-of home caregiving), that is, 3.32% of everyone included in the survey. Approximately 71% were females, whose age is lower in comparison with noncaregivers (67 vs 75 years old). The number of years of education was >12 for informal caregivers (11 in the case of noncaregivers). Approximately 41% of caregivers and 36% of noncaregivers had financial difficulties. Regarding mental health symptoms, >33.12% of caregivers felt sad or depressed, 37.60% were nervous, anxious, or "on edge," 31.86% had difficulty sleeping, and 34.72% felt lonely. All of these mental symptoms were statistically more numerous than those found among non-caregivers ([Table 1](#)).

With regards to geographic area, 39.55% of caregivers lived in a country with a low mortality rate due to COVID-19, a statistically significant figure that is higher than that for non-caregivers (36.85%). Conversely, the percentage of caregivers living in a country with a high mortality rate was 35.49%, a figure significantly lower than the 43.40% of non-caregivers who lived in a country with a high mortality rate. Finally, most of the caregivers (64.38% of them) lived in a country with low expenditure on LTC, whereas only 22.58% of them lived in a country with high expenditure on LTC ([Table 1](#)).

### Main Statistical Analysis

Taking into account the statistical analysis ([Table 2](#)), it is observed that since the outbreak of COVID-19, informal caregivers in Europe have had a higher probability of reported mental health symptoms than non-caregivers. More precisely, when geographic localization was not considered (model 1), informal caregivers had a higher probability by 8.2 percentage points (p.p.) of being sad or depressed than non-caregivers. Moreover, they had a higher probability by 7.1 p.p. of being anxious or nervous than non-caregivers and by 6.3 p.p. of having difficulty sleeping. By country (model 2), the main results remained the same, but the marginal effects differed slightly, as the higher probability of caregivers being sad or depressed fell to 6.3 p.p., of their being anxious or nervous to 6.6 p.p., and of their having difficulty sleeping to 5.3 p.p. Finally, by geographic area (model 3), the main results again remained the same, but the marginal effects slightly increased, and showed a higher probability of being sad or depressed of 8 p.p., of being anxious or nervous of 7.1 p.p., and of having difficulty sleeping of 5.9 p.p.

### Subanalysis by Geographic Area

Focusing the analysis on the geographic area (Northern, Central, Southern, and Eastern Europe), it is observed that only in Southern and Eastern Europe there were differences in reporting mental health symptoms between caregivers and non-caregivers ([Table 3](#)). Thus, informal caregivers in Southern Europe had a 8 p.p. higher probability of being sad or depressed than non-caregivers in this area. In Eastern Europe this probability reached 9.7 p.p. In Southern Europe, the probability of caregivers being anxious or nervous was 1.4 p.p. higher than among non-caregivers, whereas in Eastern Europe this probability was 9.3 p.p. higher. No differences were found in relation to sleeping difficulty or to feelings of loneliness, irrespective of the geographic area.

### Subanalysis by Mortality Rate Due to COVID-19 and by Expenditure on LTC

The results obtained would highlight the fact that higher mortality rates due to COVID-19 were associated with greater differences in terms of being sad or depressed between caregivers and non-caregivers, regardless of the level of spending on LTC in their country ([Table 4](#)). Moreover, the differences in the probability of being anxious or nervous were similar in countries with high and medium levels of spending on LTC, although countries with low spending on LTC broke this pattern (there were greater differences between caregivers and noncaregivers in those countries with low mortality rates). Nevertheless, in countries with low mortality rates, the differences were greater when spending on LTC was high. Finally, in countries with high mortality rates, there were no differences in the probability of feeling lonely, regardless of their level of spending on LTC.

## Discussion

This article has tried to analyze how the crisis generated by SARS-COV-2 affected the presence of self-reported mental health symptoms of informal caregivers in different European countries. To the best of our knowledge, this is the first article that has analyzed the impact of the pandemic on non-professional caregivers throughout Europe, taking into account different symptoms of mental health.

Broadly, the results obtained highlight the fact that, since the outbreak of COVID-19, informal caregivers in Europe have had a higher probability of reporting mental health symptoms than non-caregivers. In fact, the differences were even higher when outcomes such as being sad or depressed and being anxious or nervous were considered. Nevertheless, different factors affected the mental health of non-professional caregivers during the pandemic: first of all, the geographic area, given that the differences in mental health symptoms reported between informal caregivers and noncaregivers were only found in Southern and Eastern Europe. However, differences between countries should be interpreted with caution, because some variables might have been omitted from the analysis (eg, differences in culture or social networks), and these omissions could influence the results obtained. Nevertheless, we aimed to correct the omission bias by including country dummies, which could also reflect the influence that the implementation of several policies may have had. Second, other factors to be considered are the intensity of the pandemic (measured through mortality rates caused by COVID-19) and the strength of the LTC systems (measured through public LTC expenditure as a share of gross domestic product) in each country. Thus, higher mortality rates due to COVID-19 were associated with greater differences in terms of being sad or depressed

**Table 1.** Sociodemographic characteristics of caregivers and non-caregivers.

Variables	Caregivers in 2020 n = 1727	Non-caregivers in 2020 n = 50 279	Comparison of means* P value
Age (SD)	67.74 (1.970)	75.44 (0.43)	.0012
Female (%)	70.58	57.45	.0000
Years of education (SD)	12.08 (0.097)	11.18 (0.02)	.0000
Whether a close relative has died due to COVID-19 (%)	2.83	2.65	.6425
Having economic difficulties (%)	41.27	36.63	.0010
Experiencing major illness or health conditions (%)	8.92	10.87	.0103
Nervous, anxious or on edge (%)	37.60	30.01	.0000
Sad or depressed (%)	33.12	25.80	.0000
Trouble sleeping (%)	31.86	27.75	.0002
Feeling lonely (%)	34.72	28.86	.0030
Mortality rate due to COVID-19 (10 000 inhabitants) <sup>†</sup> (%)			
People living in a country with low mortality rates due to COVID-19	39.55	36.85	.0224
People living in a country with middle mortality rates due to COVID-19	24.96	19.75	.0000
People living in a country with high mortality rates due to COVID-19	35.49	43.40	.0000
LTC expenditure <sup>‡</sup> (%)			
People living in a country with low LTC expenditure	64.38	60.88	.0033
People living in a country with moderate LTC expenditure	13.04	15.18	.014
People living in a country with high LTC expenditure	22.58	23.97	.1958
Geographic area <sup>§</sup> (%)			
North	10.07	10.73	.3841
Center	19.57	21.47	.0308
South	23.21	20.05	.0013
East	47.13	47.59	.7900

Note. Low LTC expenditure: <1% of the GDP; mid LTC expenditure: ≥1% and 2% of the GDP; high LTC expenditure: >2% of the GDP. Regarding mortality rate, the cut points were classified as follows; low incidence: ≤5 per 10 000 inhabitants; mid incidence: between 6 and 9 per 10 000 inhabitants; high incidence: >9 per 10 000 inhabitants. Source: own elaboration.

GDP indicates gross domestic product; LTC, long-term care.

\*Comparison of means was performed for caregivers in 2020 and no caregivers in 2020.

<sup>†</sup>High: >10; middle: between 6 and 9. Low: <5.

<sup>‡</sup>High: >2%, middle: between 1% and 2%. Low: <1%.

<sup>§</sup>North: Sweden, The Netherlands, Denmark, Finland. Centre: Germany, France, Switzerland, Belgium, Luxembourg. South: Spain, Portugal, Italy, and Greece. East: Israel, Czech Republic, Poland, Hungary, Slovenia, Estonia, Croatia, Lithuania, Bulgaria, Cyprus, Latvia, Malta, Romania, and Slovakia.

**Table 2.** Differences in mental health symptoms reported between caregivers versus no caregivers.

Variables	Model 1*		Model 2 <sup>†</sup>		Model 3 <sup>‡</sup>	
	dy/dx (Std. Err)	P> z	dy/dx (Std. Err)	P> z	dy/dx (Std. Err)	P> z
Sad/depressed	0.082 (0.015)	.000	0.074 (0.014)	.000	0.080 (0.017)	.000
Anxious/nervous	0.071 (0.015)	.000	0.066 (0.012)	.000	0.071 (0.013)	.000
Trouble sleeping	0.063 (0.015)	.000	0.058 (0.016)	.000	0.059 (0.015)	.000
Feeling lonely	0.015 (0.024)	.526	0.014 (0.022)	.512	0.023 (0.024)	.340

Source: own elaboration.

COVID-19 indicates coronavirus disease 2019; GDP, gross domestic product; LTC, long-term care; Std. Err, standard error.

\*Control variables: sex, age, age squared, years of education, whether people have had economic difficulties and experienced major illness or health conditions, and whether a close relative has died due to COVID-19.

<sup>†</sup>Control variables: sex, age, age squared, years of education, whether people have had economic difficulties and experienced major illness or health conditions, and whether a close relative has died due to COVID-19 and country dummies.

<sup>‡</sup>Control variables: sex, age, age squared, years of education, whether people have had economic difficulties and experienced major illness or health conditions, whether a close relative has died due to COVID-19, incidence of deaths due to COVID-19, and LTC expenditure as a share of GDP.

**Table 3.** Differences in mental health symptoms reported between caregivers and no caregivers depending on the geographic area.

Variables	Sad/depressed		Anxious/nervous		Trouble sleeping		Feeling lonely	
	dy/dx (Std. Err)	P> z	dy/dx (Std. Err)	P> z	dy/dx (Std. Err)	P> z	dy/dx (Std. Err)	P> z
North countries	0.054 (0.062)	.370	0.015 (0.035)	.574	0.082 (0.046)	.059	0.092 (0.061)	.093
Central countries	0.050 (0.052)	.320	0.022 (0.025)	.364	0.047 (0.018)	.013	-0.036 (0.029)	.188
South countries	0.080 (0.023)	.000	0.092 (0.013)	.000	0.026 (0.039)	.488	-0.000 (0.014)	.969
East countries	0.097 (0.021)	.000	0.093 (0.019)	.000	0.084 (0.025)	.000	0.029 (0.029)	.308

Note. Control variables: sex, age, age squared, years of education, whether people have had economic difficulties and experienced major illness or health conditions, and whether a close relative has died due to COVID-19.

Source: own elaboration

COVID-19 indicates coronavirus disease 2019; Std. Err, standard error.

between caregivers and non-caregivers. Furthermore, the differences in the probability of being anxious or nervous were similar in countries with high and medium levels of spending on LTC and greater in countries with low mortality rates.

Another fact that needs to be considered is that LTC policies implemented due to COVID-19 in Europe have been very diverse. Although the information about care support policies is highly fragmented, and although specific interventions aimed at supporting informal caregivers may have been implemented in certain countries, but not included in international scientific publications, it does seem clear that some countries have been more active than others. For example, in countries such as Finland, Sweden, and Latvia, financial support has been provided to community-based care services. In Finland, some temporary

financial help for users of basic and social care assistance was provided by the middle of the year 2020 and a further €75 per person per month as temporary help for those who expected to receive basic social assistance during the period of restrictions and to continue receiving that type of care in autumn 2020.<sup>43</sup> In Sweden, during the last quarter of the year 2020, the government approved a supplement of 4 billion Swedish Krona for the municipalities that aimed to strengthen care for the elderly during the year 2021 and the addition of the same amount for those areas with postponed care duties.<sup>44</sup> In Latvia, the government provided a grant equal to 50% of the amount of the benefit paid to any person in a crisis situation, which could never be higher than €120 per person per household, over a 3-month period.<sup>45</sup> Moreover, since the outbreak of coronavirus, some countries have

**Table 4.** Differences in mental health symptoms reported between caregivers and no caregivers depending on the deaths caused by COVID-19 and LTC expenditure as a share of GDP.

Variables	Sad/depressed		Anxious/nervous		Trouble sleeping		Feeling lonely	
	dy/dx (Std. Err)	P> z	dy/dx (Std. Err)	P> z	dy/dx (Std. Err)	P> z	dy/dx (Std. Err)	P> z
High rate in deaths due to COVID-19 and low LTC expenditure	0.114 (0.056)	.081	0.080 (0.012)	.000	0.059 (0.024)	.013	-0.003 (0.046)	.932
High rate in deaths due to COVID-19 and mid LTC expenditure	0.056 (0.056)	.321	0.051 (0.019)	.006	0.031 (0.026)	.234	-0.002 (0.006)	.000
High rate in deaths due to COVID-19 and high LTC expenditure	0.165 (0.042)	.000	0.095 (0.003)	.000	0.035 (0.024)	.090	-0.044 (0.052)	.403
Mid rate in deaths due to COVID-19 and low LTC expenditure	0.055 (0.149)	.689	0.076 (0.027)	.004	0.077 (0.051)	.129	0.047 (0.055)	.374
Mid rate in deaths due to COVID-19 and mid LTC expenditure	-0.200 (0.067)	.082	-0.070 (0.108)	.531	-0.070 (0.103)	.531	0.124 (0.303)	.660
Mid rate in deaths due to COVID-19 and high LTC expenditure	0.056 (0.078)	.478	-0.063 (0.063)	.399	0.045 (0.100)	.129	-0.000 (0.000)	.675
Low rate in deaths due to COVID-19 and low LTC expenditure	0.067 (0.045)	.102	0.138 (0.022)	.000	0.054 (0.035)	.095	0.079 (0.055)	.104
Low rate in deaths due to COVID-19 and mid LTC expenditure	0.083 (0.047)	.085	0.009 (0.069)	.797	0.060 (0.008)	.000	-0.066 (0.099)	.484
Low rate in deaths due to COVID-19 and high LTC expenditure	0.093 (0.013)	.000	0.003 (0.006)	.605	0.087 (0.067)	.220	0.071 (0.019)	.000

Note. Control variables: sex, age, age squared, years of education, whether people have had economic difficulties and experienced major illness or health conditions, and whether a close relative has died due to COVID-19. Low LTC expenditure: <1% of the GDP; mid LTC expenditure: ≥1% and 2% of the GDP; high LTC expenditure: >2% of the GDP. Regarding mortality rate, the cut-off points were classified as follows; low incidence: ≤5 per 10 000 habitants; mid incidence: between 6 and 9 per 10 000 habitants; high incidence: >9 per 10 000 habitants.

Source: own elaboration.

COVID-19 indicates coronavirus disease 2019; GDP, gross domestic product; LTC, long-term care.



implemented measures to protect or support informal caregivers. It seems that most of those measures were related to virtual support activities, which were present in >80% of the countries considered.<sup>46</sup> Such virtual meetings aimed to facilitate social contact for those bearing a caregiving burden or to offer structured interventions, which included psychological support sessions and virtual caregiving training meetings. Nevertheless, these virtual meetings were sometimes not considered enough as supporting measures for informal caregivers.<sup>47,48</sup> Specific policies to support those providing care to relatives in need of it were implemented in some countries, ranging from specific movement allowances such as those in Estonia<sup>49</sup> or Germany<sup>50</sup> to programs that considered benefits for carers, such as the “MECUIDA” program in Spain<sup>51</sup> or #RestaACasa in Italy,<sup>52</sup> which also consisted of a call center to provide emotional support or help with shopping for food or pharmaceuticals. Nevertheless, some of these policies were applied after the data collection process, so they may have modified or alleviated the negative burden borne by informal caregivers after the coronavirus outbreak compared with that of noncaregivers.

Some limitations also need to be mentioned. First of all, the data used in the study were cross-sectional and did not allow us to establish causality or to explore heterogeneity within and between individuals. SHARE has planned to provide a second collection of data in the near future, which we aim to use to assess whether the associations observed in the current analysis are maintained or modified after some time. Second, the available information about caregivers and the care provided is limited. We only have information about informal caregivers who provided care outside the household. This fact does not permit to include in the analysis those who provided care to coresident care-recipients. Additionally, the intensity of the care provided was not known. A recent survey conducted in the United Kingdom has actually shown an increase in the time spent and the intensity of caring due to the pandemic, which might be a result of the closure of community services<sup>53</sup> forcing them to look after those in need for care, of restrictions on movement,<sup>54</sup> or of a fear that external personnel (such as domiciliary care staff) who provided assistance before the COVID-19 outbreak could spread the virus and withdraw their services.<sup>48,55</sup> Third, it would have been interesting that SHARE had included validated patient-related outcome measures specifically designed to identify mental health symptoms or even preference based generic questionnaires that include a mental dimension. Despite this fact, the existing literature has already identified a relevant correlation between declared symptoms, even when they are asked in a simple way, and mental health.<sup>56-58</sup>

Another issue to be mentioned is the fact that we have used the mortality data provided by official sources.<sup>39</sup> This measure might not be perfect and may not reflect the real impact of COVID-19, as several studies point towards the existence of problems in the records that would lead to an underestimation of the number of deaths from COVID-19, especially during the first months of the pandemic.<sup>59-63</sup> An alternative measure would have been the excess mortality produced in each country. The excess mortality measures the difference between the expected deaths, in relation to those produced in previous years in the country, and the deaths registered in the year considered. Therefore, it would not only collect the excess deaths that SARS-CoV-2 has directly produced, but also those indirectly attributable to delays in acute emergency care, exacerbations of chronic diseases, and greater psychological distress caused by lockdowns and the economic and social situation.<sup>64,65</sup> Given the group of countries studied, we did not consider that the use of excess death significantly changed the results or the conclusions of our work, although this question could be explored in future studies.

Nevertheless, and despite all the limitations mentioned earlier, this is the first analysis that provides information about the impact that COVID-19 pandemic might be causing on the mental health of “the forgotten workers” in different European countries. Thus, our work provides information about a population group that has become invisible during the crisis generated by COVID-19 and confirms our preliminary hypothesis about mental health in that group. This information should be useful for the implementation of additional measures to support their care and also for their identification as a vulnerable group that requires reinforced provision of psychological care. Taking into account the great effect on mental health symptoms reported by caregivers who provide care out of home, in the case of the caregivers who usually reside in the home of the person cared for (who tend to provide more intense support in terms of hours of care and complexity of the tasks performed), our results might also suggest that this group may require additional care of their mental health.

The coronavirus outbreak has highlighted the importance of informal caregivers and the heavy load that they bear, which was already a concern before the COVID-19 pandemic and which jeopardizes their mental health. The support structures available for unpaid caregivers have always been scarce, but since the surge of the pandemic, many informal caregivers have been ceaselessly providing the same amount of care, or even with a higher intensity, without their usual support structures, which might have stopped their care provision activities completely. Although some countries have implemented specific measures to support unpaid caregivers, some surveys have shown that >50% of the interviewed caregivers felt exhausted and worried about “burning out” in the near future<sup>53,54</sup> and have claimed more financial support, among other kinds of assistance.

Some future lines of research could entail rerunning the current analysis by using a follow-up questionnaire. Future SHARE waves will include some sections of the SHARE COVID-19 poll to assess the long-term impact of COVID-19 among older European populations, and this will allow us to fill in some information gaps identified in our study, for example, by providing some longitudinal associations in terms of mental health, including the appropriate patient-related outcome measures and informal caregiving, or an in-depth profile of the informal caregiver (including the caregiving trajectory, presence of caregivers within their households). Likewise, it is necessary to analyze the situation of caregivers residing in the home of the person being cared for to know whether the impact of COVID-19 on their physical and mental health is similar or even greater than that identified in our study. Moreover, we might be able to evaluate or, at least, to infer how the national healthcare and LTC systems have responded to the pandemic situation and which lessons for the future could be drawn from the very different national political responses to the challenge of managing the burden of coronavirus.

## Conclusions

Since the outbreak of COVID-19, informal caregivers in Europe have had a higher probability of reporting mental health symptoms than non-caregivers. This result is more intense in Southern and Eastern European countries. In countries with higher mortality rates due to COVID-19, there have been greater differences in terms of being sad or depressed between caregivers and non-caregivers. To the best of our knowledge, this is the first study evaluating the short-term effect that the COVID-19 outbreak has posed on mental health symptoms among informal caregivers versus non-caregivers. Although some supporting policies and

programs were implemented for informal caregivers during the initial stage of the pandemic, those interventions widely varied between countries, implying that some areas provided no support for non-professional carers, and most of those measures were implemented after the data collection used in the study, motivating future lines of research.

## Supplemental Material

Supplementary data associated with this article can be found in the online version at <https://doi.org/10.1016/j.jval.2021.10.011>.

## Article and Author Information

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