Job Loss and Lower Healthcare Utilization due to COVID-19 among Older Adults across 27 European Countries

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ABSTRACT

Background. Older adults are at greater risk for becoming severely ill from COVID-19; however, the impact of the pandemic on their economic activity and non-COVID-19 related healthcare utilization is not well understood. The aim of this study was to examine the prevalence and predictors of COVID-19 related unemployment and healthcare utilization in a sample of older adults across 27 European countries.

Methods. We used data from the Study of Health, Ageing and Retirement in Europe (SHARE) COVID-19 Survey, collected between June and August 2020. Participants (n=52,061) reported whether they lost a job, forwent medical treatment, and whether their appointment was postponed due to COVID-19. Three-level models were estimated for each outcome to test the effects of individual, household, and country-level characteristics.

Results. The mean prevalence of reported job loss, forgone, and postponed medical care were 19%, 12%, and 26%, respectively. Job loss was associated with female sex, lower education and household income, and older age in women. For example, the odds ratio of job loss, comparing primary vs. tertiary (college) education, was 1.89 (95% CI 1.59-2.26). Forgone and postponed medical care was associated with older age in men, female sex, and higher education. At the country level, postponed medical care was associated with more stringent governmental anti-COVID measures.

Conclusion. Job loss and lower healthcare utilization for non-COVID-19 related reasons were common among older adults and were associated with several sociodemographic characteristics. Job loss appeared to disproportionally affect already economically vulnerable individuals, raising concerns about the exacerbation of social inequalities.

Keywords: COVID-19, older adults, job loss, inequality, healthcare utilization

INTRODUCTION

Since the outbreak of coronavirus disease (COVID-19), efforts to prevent COVID-19 morbidity and mortality have been at the forefront of attention. However, restrictions on travel, movement, and economic activity necessary to contain the spread of the disease were not without side effects and resulted in increased unemployment and lower healthcare utilization for conditions unrelated to COVID-19 [1–4].

Older age is one of the most salient risk factors for severe illness and death from COVID-19 [5,6]. At the same time, older adults are vulnerable to the economic and non-COVID-19 related health impact of the pandemic [7,8]. From April to June 2020, one in four furloughed workers in the United Kingdom were aged 50 and over. Similarly, unemployment disproportionally affected older workers in the United States [9–11]. In addition, there is growing evidence that fears of COVID-19 and the pandemic-related restrictions resulted in postponed or skipped preventive screenings, treatment, and surgeries for conditions such as cancer and heart disease [1,12–15]. Lower healthcare utilization for acute and chronic health conditions that are more prevalent among older adults may compromise the health status of this population [16].

The negative impact of COVID-19 on older adults may be exacerbated by additional known risk factors for adverse economic and medical outcomes (e.g., low socioeconomic status) [8]. Previous studies reported increased concentration of COVID-19 related job losses among low-educated and low-income workers [4,17,18], and among women [19]. Women were also more likely than men to delay or avoid medical care for non-COVID-19 related reasons [12]. The evidence of unequal economic and health effects of COVID-19 was reported in the samples from the United States, United Kingdom, or Italy [12,18,20].

It is still largely unknown whether and to what extent the impact of COVID-19 on different socio-demographic groups varies by country-level characteristics [21]. For example, country macro-level indicators such as income and wealth distribution may modify this impact, e.g., by amplifying social gradients in health and social outcomes [22,23]. Additionally, job loss and healthcare utilization in older adults may be affected by country-level characteristics specific to COVID-19 pandemic. High number of COVID-19 deaths in the respective country may motivate older adults to limit economic activity and forgo medical appointments to protect themselves from the infection. Similarly, stringent anti-pandemic measures put in place to limit the spread of COVID-19 may inadvertently lead to job loss and lower healthcare utilization for reasons unrelated to COVID-19.

In the current study, we examined the associations between individual and household demographic characteristics as well as country-level characteristics on a COVID-19 related job loss and medical care postponement and avoidance in a sample of adults aged 50 and over across 27 European countries. First, we estimated the prevalence of the outcomes; second, we examined whether individual and household demographic characteristics, as well as country-level characteristics, were associated with the likelihood of the outcomes.

METHODS

Population and sample

We utilized data from the Study of Health, Ageing and Retirement in Europe (SHARE), a cross-national, longitudinal study of health, socio-economic conditions, and family and social networks of adults aged 50 and over across 28 European countries and Israel [24]. For the purpose of the current study, we used data from the SHARE COVID-19 Survey, developed to examine the social, health, and economic impact of the COVID-19 pandemic.

Data were collected by telephone (CATI) from 26 European countries and Israel between June and August 2020 from a sub-sample of the SHARE respondents [25].

Given that the vast majority of the SHARE COVID-19 Survey were participants older than 50 years, we limited our sample to this age group (N = 52,061; 99.5% of the total sample). The full sample was used to examine the likelihood of postponement and avoidance of medical care due to COVID-19. To investigate the likelihood of job loss, the analysis was restricted to economically active older adults, i.e., those who answered affirmatively to the question: "At the time when Corona broke out, were you employed or self-employed, including working for family business" (N = 10,958; 21.5% of the total sample).

The SHARE study was approved by the Ethics Committee at the University of Mannheim (Waves 1- 4) and by the Ethics Council of the Max- Planck- Society (Waves 5-8). Additionally, country-specific ethics committees or institutional review boards approved implementations of SHARE in the participating countries. All study participants provided informed consent.

Measurements

Outcomes

Lost job due to COVID-19 was assessed by participants' reports whether they have become unemployed, were laid off, or had to close their business due to the Corona crisis. It was coded as 0 = no, 1 = yes. *Medical treatment forgone due to COVID-19* was based on a question whether participants forwent medical treatment because they were afraid to be infected by the coronavirus. It was coded as 0 = no, 1 = yes. *Medical appointment postponed due to COVID-19.* reflected whether a doctor or medical facility decided to postpone the

participants' scheduled medical appointment due to coronavirus. It was coded as 0 = no, 1 = yes.

Predictors

Sex was coded as 0 = male and 1 = female. The *age* of participants in 2020 was recorded in years. *Highest attained education level* was assessed by combining the information about the highest attained education from previous SHARE waves (Waves 1 through 7). It was coded using the International Standard Classification of Education (ISCED) 1997 coding of education, ranging from 0 = no education or pre-primary education to 6 = second stage of tertiary education (advanced research qualification). Participants who indicated "other" or "still in school" were coded as missing (less than .01% of the available data). These seven codes were grouped into three categories: *primary education* (categories 0 – 2), reflecting pre-primary, primary, and lower secondary education, *secondary education* (categories 3 – 4), reflecting upper secondary and post-secondary non-tertiary education, and *tertiary education* (categories 5 – 6), reflecting the first and second stage of tertiary education. For the purpose of the analyses, this was recoded into two dummy codes (primary and secondary), with tertiary education used as a reference group.

Partner in household. This item asked whether the respondent had a partner in a household (coded as 0 = no, 1 = yes), and *household income* was estimated from a response to a question "How much was the overall monthly income, after taxes and contributions, that your entire household had in a typical month before Corona broke out?" This sum was transformed to an equivalized scale by dividing the household income by the square root of household size [26]. Given that this question asked about the household income, we aggregated the values across individuals from the same household.

GINI coefficient of income inequality in 2019 was obtained from the Eurostat website [27], and 2019 *GDP per capita* adjusted for purchasing power parity for 2019 was obtained from the World Bank [28].

Total deaths per million from COVID-19 were obtained from the Our World in Data website [29]. The value reflects the total number of COVID-19 related deaths per million by the last date of the SHARE data collection for each country.

Government stringency index, taken from the Our World in Data website [29], is a composite measure of the stringency of government policies to curb the spread of the COVID-19 computed by the Oxford Coronavirus Government Response Tracker at the University of Oxford [30]. It includes indicators such as school closures, workplace closures, cancellation of public events, restrictions on gatherings, closing public transport, etc. The index, averaging daily values for each country from the date of their first confirmed COVID-19 case to the last date of the SHARE data collection, was rescaled to range from 0 – 100 where higher values reflect more stringent policies.

Statistical analysis

First, descriptive characteristics of the sample were assessed. The main analyses used three-level generalized linear models. These models reflected the multilevel nature of the data, where individuals were nested within households, and households were nested within countries, creating a hierarchical three-level structure. All estimates were adjusted for the other covariates in the model. Grand-mean centering was used for age and all household-level and country-level variables. The interaction of female sex with age was identified and is included in the models. We used sample weights to make the estimates of the prevalence of outcomes representative of the assessed populations. Multiple imputation was performed to deal with missing values in predictors. The highest amount of missing was for household

income (~ 24% missing data), followed by education attainment (~4% missing data). The rest of the variables had less than 1% of missing data. The imputation of the multilevel models was carried out in Blimp 2.2, which is a free software that imputes missing data in a multilevel framework using a fully Bayesian model-based imputation method [31]. A total of ten imputed datasets were created for each outcome. These were then imported into R and analyzed using *mitml* [32] and *lme4* [33] packages.

RESULTS

Table 1 shows the weighted rates of the outcome variables. The highest proportion of respondents who indicated they lost their job due to COVID-19 was in France (39%). Participants in Israel reported the highest proportion of forgoing their medical appointment (27%), while the highest proportion of having a medical appointment postponed was found in Portugal (55%). The descriptive statistics of study variables are shown in Table 2. Table 3 shows the odds ratios estimated in the multilevel models for each outcome.

Table 1

The numbers of participants and proportions of subjects who lost their job, forgone medical treatment or had medical appointment postponed by country.

	age 50+ and working (*N* = 10,958)		age 50+ (*N* = 52,061)		
	Total *n*	Lost job weighted %	Total *n*	Forgo weighted %	Postpone weighted %
Belgium	821	24%	3,777	13%	34%
Bulgaria	225	20%	813	10%	2%
Croatia	288	11%	2,001	8%	22%
Cyprus	137	35%	796	11%	18%
Czechia	475	9%	2,629	19%	35%
Denmark	710	7%	1,996	11%	30%
Estonia	1,360	10%	4,519	10%	24%
Finland	484	15%	1,460	8%	19%
France	309	39%	2,052	10%	35%
Germany	722	15%	2,649	16%	19%
Greece	550	36%	3,614	16%	11%
Hungary	123	8%	1,000	9%	20%
Israel	379	33%	1,452	27%	20%
Italy	594	31%	3,696	14%	24%
Latvia	300	6%	964	13%	15%
Lithuania	394	18%	1,260	14%	28%
Luxembourg	115	30%	928	21%	52%
Malta	135	17%	826	10%	34%
Netherlands	175	5%	787	6%	29%
Poland	727	5%	2,920	9%	27%
Portugal	189	25%	1,114	16%	55%
Romania	205	13%	1,471	5%	7%
Slovakia	296	18%	934	15%	21%
Slovenia	321	29%	3,107	4%	32%
Spain	168	18%	2,052	4%	27%
Sweden	314	10%	1,364	16%	17%
Switzerland	442	27%	1,880	13%	27%

Table 2

Descriptive characteristics of the study sample

	n	*Mean / %*	*sd*	*min*	*max*
Dichotomous variables – individual level					
Female	51,865	58%			
Partner in household	52,060	69%			
Primary education	50,509	35%			
Secondary education	50,509	42%			
Tertiary education	50,509	23%			
Lost job	10,956	19%			
Forgone medical treatment	51,745	12%			
Had medical appointment postponed	51,724	26%			
Continuous variables – individual level					
Age (years)	52061	70.56	9.25	50	104.00
Continuous variables – household level					
Equivalized household income (in Euros)	26,854	1,247.22	1068.40	0	9888.53
Continuous variables – country level					
GINI index	27	30.10	4.25	22.80	40.80
Government stringency index	27	57.00	6.82	41.62	69.39
GDP per capita (in US Dollars)	27	36,359.55	14,799.13	18,563.31	94,277.96
COVID deaths per mil.	27	185.46	230.18	5.13	847.27

Table 3

Multivariable adjusted Odds ratios (OR) and 95% confidence intervals (95%CI) of lost job, forgone medical treatment, and had medical appointment postponed due to COVID-19

		Lost job due to COVID, 19 *N* = 10,958		Forgone medical treatment *N* = 52,061		Had medical appointment postponed *N* = 52,061	
		OR	95% CI	OR	95% CI	OR	95% CI
Age (per 10 years)	In men	1.02	[0.88, 1.18]	1.15	[1.09, 1.21]	1.08	[1.04, 1.12]
	In women	1.44	[1.26, 1.65]	1.01	[0.97, 1.05]	0.93	[0.91, 0.96]
Sex (at centered age)							
Men		1 (ref)		1 (ref)		1 (ref)	
Women		1.27	[1.14, 1.41]	1.63	[1.54, 1.73]	1.21	[1.16, 1.26]
Partner in household							
No		1 (ref)		1 (ref)		1 (ref)	
Yes		0.98	[0.86, 1.12]	0.99	[0.93, 1.05]	1.03	[0.98, 1.08]
Education							
Tertiary		1 (ref)		1 (ref)		1 (ref)	
Secondary		1.60	[1.40, 1.82]	0.83	[0.78, 0.90]	0.92	[0.87, 0.97]
Primary		1.89	[1.59, 2.26]	0.73	[0.68, 0.80]	0.81	[0.76, 0.87]
Equivalized household income (per 1,000 EUR)		0.84	[0.78, 0.90]	0.98	[0.93, 1.02]	1.03	[0.99, 1.07]
GINI index (per 1 unit)		1.04	[0.98, 1.10]	1.01	[0.98, 1.05]	0.91	[0.86, 0.95]
GDP per capita (per 10,000 USD)		1.23	[1.06, 1.43]	1.14	[1.04, 1.25]	1.26	[1.12, 1.43]
COVID deaths/million (per 100)		1.07	[0.96, 1.20]	0.97	[0.90, 1.04]	1.03	[0.94, 1.12]
Government stringency index (per 10 units)		1.39	[0.95, 2.05]	1.11	[0.86, 1.42]	1.62	[1.18, 2.23]

Women were more likely to lose their job due to COVID-19 (OR = 1.27, 95% CI [1.14, 1.41]), and this effect was larger for older women (OR per 10 years = 1.44 [1.26, 1.65]). Compared to individuals with tertiary education, individuals with secondary (OR = 1.60 [1.40, 1.82]) or primary education (OR = 1.89 [1.59, 2.26]) showed a higher likelihood of having lost a job, while individuals with higher household income were less likely to lose a job due to COVID-19 (OR per 1,000 EUR = 0.84 [0.78, 0.90]). The likelihood of losing a job due to COVID-19 was higher in countries with higher GDP, OR per 10,000 USD = 1.23 [1.06, 1.43].

Turning to medical care outcomes, women (OR = 1.63 [1.54, 1.73]) were more likely to forgo their treatment than men; however, the effect changed with increased age, as older men were more likely to forgo their medical treatment (OR = 1.15 [1.09, 1.21]), while this was not the case for older women (OR = 1.01 [0.97, 1.05]). Individuals with completed secondary (OR = 0.83 [0.78, 0.90]) or primary education (OR = 0.73 [0.68, 0.80]) were less likely to forgo medical treatment as opposed to individuals with tertiary education. Individuals living in countries with higher GDP per capita were more likely to forgo their treatment, OR per 10,000 USD = 1.14 [1.04, 1.25].

Similarly, women were more likely to have their appointment postponed than men on average (OR = 1.21 [1.16, 1.26]). However, with increased age, women were less likely to have their medical appointment postponed (OR per 10 years = 0.93 [0.91, 0.96], while men were more likely (OR = 1.08 [1.04, 1.12]).

As opposed to individuals with tertiary education, individuals with secondary (OR = 0.92 [0.87, 0.97]) or primary education (OR = 0.81 [0.76, 0.87]) were less likely to have their appointment postponed. Individuals in countries with higher income inequality (GINI) were less likely to have their appointments postponed (OR = 0.91 [0.86, 0.95]); conversely, individuals in countries with higher GDP per capita were more likely to have their

appointments postponed (OR per 10,000 USD = 1.26 [1.12, 1.43]). Furthermore, individuals in countries with a higher government stringency index were more likely to have their appointments postponed, OR = 1.62 [1.18, 2.23].

DISCUSSION

We utilized a cross-national sample of older adults from the SHARE study to examine job loss and healthcare utilization during the spring 2020 wave of COVID-19 pandemic. We found a high prevalence of all outcomes; the mean prevalence of reported job loss, forgone and postponed medical appointment were 19%, 12% and 26%, respectively. Job loss was associated with older age in women, female sex, lower education, and household income. Forgone and postponed medical care were also associated with age and sex but also with higher education. Postponed care was associated with a higher government stringency index.

The main strength of our study was the use of a large, multi-level, and multi-national weighted dataset. Despite its strengths, the study has several limitations that need to be considered when interpreting the findings. First, we relied on self-reported data that are prone to bias and their accuracy might be affected by differing response patterns across the investigated countries. Second, due to modest response rates, the study samples may not be entirely representative of the respective countries. Relatedly, due to the limited sample sizes of some of the countries included, we decided to impute missing data and thus we opted against using weights for the multilevel models. As such, the estimates are representative of the people sampled in this study, comprising mostly older adults. Third, the country-level variables were taken from external sources and it is possible that the precision of these indicators differs between countries. This might lead to underestimation of the effect estimates of these variables but is unlikely to lead to spurious associations. Fourth, as the information

about participants' health conditions (e.g., diabetes, cancer, or cardiovascular disease) were not available, we did not include them as control variables in our models. Lastly, our study is based on a sample of older adults, therefore the results may not be readily generalizable to the general population.

In the SHARE data, the prevalence of job loss among economically active participants exceeded 10.0% of the participants in 21 out of the 27 countries and was as high as 25.0% or more in nine of the examined countries. To put the prevalence of reported job loss into context, the average unemployment rate in the European Union was between 7.2 – 7.7% from June to August 2020 [34]. Job loss during the pandemic may lead not only to financial hardship among the unemployed but also to increased morbidity. Previous studies found an association between COVID-19 related financial hardship and psychological distress, mental health problems, as well as increased cardiovascular incidence [35–37]. The high prevalence of job loss among older adults is particularly troubling as loss of employment in older age was found to have a large and lasting impact on future employment probabilities [38].

Consistent with previous studies, we found that COVID-19 related job loss disproportionally affected individuals and households with lower education and income as well as women, particularly older ones [18–20]. In other words, economically vulnerable individuals were more likely to become unemployed due to COVID-19. If left unaddressed, this pattern may lead to the exacerbation of existing social inequalities [20,21]. It is important to consider the unequal impact of the pandemic when developing policies to mitigate the negative consequences of COVID-19. Lastly, higher country GDP per capita was associated with a higher likelihood of job loss, probably due to the high proportion of employment in the service sector, typical for advanced economies [39].

Forgoing medical care and particularly having a medical appointment postponed for COVID-19 related reasons was common in the SHARE sample. This is consistent with

previous reports of a decrease in medical care utilization for non-COVID-19 related conditions during the pandemic [1,14,15]. Individual and household demographic characteristics, as well as country-level characteristics, were associated with the likelihood of forgoing medical care and having it postponed in a similar pattern for both outcomes.

Women were more likely to forgo medical care or have it postponed, although this effect decreased with age in this group. Greater avoidance and delay of medical care among women during the pandemic was previously reported in a sample of US adults [12]. This disparity might be due to greater adherence to pandemic measures (e.g., recommendations to stay home) among women [40,41] but it may also reflect a previously reported pattern whereas older women recorded lower healthcare utilization than men already before the pandemic [42]. Thus, women may be at a greater risk for missing opportunities to receive medical care for non-COVID-19 related reasons during the pandemic.

Individuals with primary and secondary education (as compared to college graduates) were less likely to forgo medical care or have it postponed. This observation might be partially explained by the better health status of individuals with higher education. Consistently with this explanation, the association between higher education and lower healthcare utilization was no longer significant after adjusting for chronic health conditions (e.g., diabetes, high blood pressure, and obesity) in a sample of the general US population [12]. Additionally, individuals with higher education reported greater adherence to pandemic measures [40] and therefore may be more likely to forgo non-urgent medical care.

The observed association between higher country GDP per capita and the greater likelihood of forgoing medical care or having it postponed might be due to better overall population health in countries with higher GDP [43]. It is also possible that countries with greater wealth were better able to mobilize resources such as telehealth to deliver medical care without the need for an in-person appointment. Perhaps surprisingly, individuals in countries

with higher GINI index (greater inequality) were less likely to have their appointments postponed. Countries with low or high GINI index in the context of the European Union may potentially share common characteristics that might explain the observed association. While the reason behind this association is unclear, perhaps the countries with higher GINI index were less affected by COVID-19 and thus they were not motivated to postpone medical appointments.

Lastly, individuals in countries with more stringent COVID-19 policies during spring 2020 were more likely to have their appointments postponed, probably due to restrictions and closures affecting medical facilities. Although it is critical to stop the spread of COVID-19, there have been concerns that delays in medical care for conditions unrelated to COVID-19 may result in greater morbidity and mortality due to missed treatment opportunities [14,15].

Job loss and lower healthcare utilization for non-COVID-19 related reasons were common among older adults from the SHARE sample. Policy actions may be needed to prevent poverty among vulnerable households and, relatedly, exacerbation of social inequality [20,21]. Additionally, it is important to maintain access to healthcare during the lockdown and to follow-up on any missed medical appointments. The decrease in the number of screenings for chronic conditions raised concerns that the morbidity from missed treatment opportunities might offset the gains from protecting the older population from COVID-19 disease [14,15]. COVID-19 pandemic brought about not only increased morbidity and mortality but also an unprecedented impact on the economy, health, and society. To describe and understand this impact will be a major challenge for the research in the upcoming years.

What is already known on this subject?

- Older age is a well-known risk factor for severe illness from COVID-19.
- Older adults may be at an increased risk for job loss during the pandemic and may forgo or postpone medical care for conditions unrelated to COVID-19 to protect themselves from the COVID-19 disease.
- Little is known about the impact of the pandemic on job loss and healthcare utilization for conditions unrelated to COVID-19 among older adults.

What this study adds?

- Job loss and lower healthcare utilization during the COVID-19 pandemic was common among older adults.
- Job loss disproportionally affected individuals who were already economically vulnerable prior to the COVID-19 pandemic.
- Healthcare utilization for conditions unrelated to COVID-19 was lower among women and those living in countries with higher stringency of COVID-19 measures.
- Unemployment as well as missed medical opportunities due to COVID-19 pandemic may compromise economic and health status of older adults.

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