

Stressors, Job Resources, Fear of Contagion, and Secondary Traumatic Stress Among Nursing Home Workers in Face of the COVID-19: The Case of Spain

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Abstract

This study aimed to analyze the psychological consequences of the COVID-19 pandemic on nursing home workers, as well as the influence of certain related stressors and job resources. Two-hundred twenty-eight nursing home workers in Spain participated in this cross-sectional study. High levels of workload, social pressure from work, contact with suffering, and fear of contagion were found. In nursing homes where cases of COVID-19 had been detected, workers experienced higher levels of secondary traumatic stress. Social pressure from work, high doses of exposure to suffering, lack of personnel and personal protective equipment, and minimal supervisor support were significant in explaining traumatic stress. Supervisor and coworker support moderated some of these relationships. The results are discussed in terms of the need to implement urgent psychosocial protection strategies and to provide personal protective equipment (PPE) to help prevent future psychological disorders in this worker population.

Keywords

work stressors, job resources, fear of contagion, secondary traumatic stress, nursing homes, COVID-19 pandemic

Introduction

On March 11, 2020, the World Health Organization (WHO, 2020) declared a global pandemic status to the epidemic caused by the novel coronavirus 2019-nCoV, a virus capable of developing among humans the disease known as COVID-19 (disease induced by SARS-CoV-2). By September 6, 2020, nearly 27 million COVID-19 cases and 900,000 deaths had been reported worldwide; 4,475,267 and 222,279, respectively, occurred in the European region. In Europe, Spain is one of the most affected, along with United Kingdom, France, Italy, and Germany (WHO, 2020).

The virus presents a rapid transmission that includes high infection rates among health professionals in Spain. The lack of material resources (i.e., personal protective equipment [PPE]) and sufficient personnel to deal with the emergency health situation caused by this virus has contributed to this situation. On several occasions, the Spanish health care system has been on the verge of collapse due to budget cuts, the large number of health professionals on sick leave, and the limited available beds within the hospital intensive care units (del Rio & Malani, 2020).

The workload in many nursing homes has increased exponentially due to the crisis caused by COVID-19 (Fischer et al., 2020). The older population is at greatest risk and lethality for this disease (D'Adamo et al., 2020). In addition, many nursing homes were instructed not to send to older adults who met certain medical criteria to hospitals (Rada, 2020). However, the nursing homes did not have sufficient resources, including health care personnel, to deal with this emergency situation, as staff reinforcements and PPEs, as well as diagnostic tests, have been slow to arrive. This was compounded by the fact that nursing home workers have also

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become infected with the virus, leading to more sick leave and, in turn, an increase in workload. This increased burden has not only been physical but also emotional. The high number of infections and deaths within nursing homes, witnessing the social isolation of the residents and its emotional consequences, has been a severe blow to nursing home employees (Armitage & Nellums, 2020; Fischer et al., 2020). These workers have also been subjected to significant social pressure, both from relatives of the residents and from the health authorities in charge (i.e., regional and community health departments), who have implemented increased monitoring and control over these nursing facilities.

It is important to note that, within the nursing homes, it is not only the medical and nursing professionals who have had to cope with high workloads and pressure during the COVID-19 crisis. Other direct patient care professionals such as social workers, occupational therapists, physiotherapists, psychologists, and even nursing home managers have been affected physically and emotionally by these high demands and lack of job resources. All of them have had to increase efforts in their respective work areas. In addition, they have all witnessed the suffering of all users and their families, and have assisted in tasks such as communicating with families and accompanying users to prevent or mitigate feelings of isolation.

To make matters worse, nursing home workers must work in conditions that were already precarious before the pandemic and exemplified lack of social, economic, and professional recognition compared with other health professionals within the health system (Zimmerman et al., 2005). The workload and emotional demands in this sector are already particularly high (Franzosa et al., 2019), and their associations with psychosocial risks such as burnout, moral distress, and compassion fatigue are well known (Lev & Ayalon, 2018; Shahar et al., 2019).

Early studies in China indicate that health professionals dealing with this pandemic have a high frequency of negative emotions, including sadness, fear of contagion, and anger (Huang et al., 2020), as well as stress, depression, and anxiety (Lu et al., 2020). In addition, this population is at high risk for developing post-traumatic stress (Cai et al., 2020). More specifically, these professionals could be at risk of experiencing secondary traumatic stress—a set of psychological symptoms acquired from exposure to people who have experienced trauma (Quinn et al., 2019). These are reactions derived from the performance of a traumatic work task that can be exacerbated when mixed with high degrees of empathy, as is the case of workers in this sector during this health crisis (Ludick & Figley, 2017). The symptoms experienced by the professionals may be the same as those of the victims of the trauma and include intrusive thoughts, recurrent painful memories, nightmares, insomnia, irritability, emotional lability, fatigue, concentration difficulties, avoidance of people and places, hypervigilance, and sadness (Ludick & Figley, 2017).

Some factors that are proving to be key in the development of all these psychological problems in this COVID-19 pandemic are as follows: the high mental burden and pressure to which workers are exposed, excessive working hours, fear of contagion for themselves and their loved ones, isolation from their families, lack of job resources, ambiguity in some tasks and roles, complex ethical decision-making, the high mortality rate, and the high degree of suffering of patients and their families (Cai et al., 2020; Greenberg et al., 2020; Shanafelt et al., 2020).

To date, most empirical studies have focused on investigating health professionals in the hospital context. Therefore, the objective of this study was to analyze the psychological consequences (i.e., secondary traumatic stress and fear of contagion) that this COVID-19 crisis is having on nursing home workers and, as well, the influence that work stressors (i.e., workload, social pressure from work, and contact with death and suffering) and inadequate job resources (i.e., lack of staff, materials and PPEs, insufficient coworker and supervisor support) could have on the development of those consequences. We hypothesized that work stressors would be related to a higher level of secondary traumatic stress and fear of contagion, in contrast to the presence of job resources, which would be negatively related to them. Furthermore, taking into account studies that point out the importance of certain job resources, such as job control and social support among nursing home workers (Kim et al., 2019; Woodhead et al., 2016), we also hypothesize that the presence of sufficient staff and PPEs, as well as coworker and supervisor support in the face of this COVID-19 pandemic, will mitigate the impact of work stressors on secondary traumatic stress and the fear of contagion among professionals working in nursing homes.

Method

Sample and Procedure

A total of 228 Spanish nursing home workers (80.3% women, 19.7% men), with an average age of 36.29 years and 8.79 years of experience in the field of nursing homes participated in this study. Participants came from 42 Spanish provinces, with the highest percentages from Madrid (31.1%) and Barcelona (12.7%). The final sample consisted of doctors (7.4%), nurses (19.3%), nurse aides (30.3%), geriatric assistants (6.5%), social workers (15.3%), psychologists (7.9%), occupational therapists (4.8%), physiotherapists (2.6%), and managers of some nursing homes (1.3%). Sociodemographic and occupational variables were organized according to whether or not these workers provided direct care to patients with symptoms of COVID-19 (Table 1).

First, a favorable report from the ethics committee of the Autonomous University of Madrid was obtained. The participants received a digital link through which they could access

Table 1. Sociodemographic and Occupational Characteristics of the Sample.

Categorical variables	Workers in contact with COVID patients (n = 156)		Workers without contact with COVID patients (n = 70)		Total workers (N = 228)	
	n	%	n	%	n	%
Sex						
Male	32	20.5	13	18.6	45	19.7
Female	124	79.5	57	81.4	183	80.3
Sentimental relationship						
With a relationship	110	70.5	51	72.9	163	71.5
Without a relationship	146	29.5	19	27.1	65	28.5
Occupation						
Medical doctors	15	9.6	2	2.85	17	7.4
Nurses	38	24.4	6	8.6	44	19.3
Nurse aides	44	28.2	24	34.3	69	30.3
Geriatric assistants	10	6.4	5	7.15	15	6.5
Social workers	19	12.2	16	22.8	35	15.3
Psychologist	9	5.7	9	12.9	18	7.9
Occupational therapists	8	5.1	3	4.3	11	4.8
Physiotherapists	5	3.2	1	1.4	6	2.6
Management of center	2	1.3	1	1.4	3	1.3
Missing values	6	3.9	3	4.3	10	4.6
Quantitative variable	M	SD	M	SD	M	SD
Age	36.29	10.04	36.46	10.83	36.29	10.26
Years of experience in the field	9.38	8.24	7.42	6.71	8.79	7.85

Note. Two participants did not answer the question whether they worked in contact with COVID-19 patients, so there is a discrepancy between the subsamples (156 and 70) and the total sample (228).

the questionnaires online using the Qualtrics platform. Before completing the survey questions, they were asked to give their written informed consent. Participants were accessed in two ways: (a) the researchers used their professional contacts to distribute the electronic links to the surveys. These contacts, in turn, distributed them to their own contacts (a technique known as snowballing); (b) the researchers contacted professionals whose public professional profiles on LinkedIn's social networks and Twitter indicated that they worked in the nursing home sector. At the end of the study, all participants had the opportunity to provide their emails if they so wished, to facilitate future follow-up once the COVID-19 outbreak was controlled. With this in mind, the medium- and long-term impact of this pandemic on the mental health of these workers will be evaluated.

Measures

All the scales used in this research have adequate psychometric properties, reflected in their corresponding validation studies. The internal consistency indices obtained for this research are shown in Table 2.

Sociodemographic and professional characteristics. By means of a brief questionnaire, participants were asked about their sex, age, whether they had a romantic relationship, number

of children, province of origin, profession, number of years of experience in the sector, and whether they were in contact with COVID-19 cases at their workplace.

Work stressors

Workload. The Workload subscale of the Secondary Traumatic Stress Questionnaire (Meda et al., 2012) was used. This consisted of five items (see Table 3), and with a response scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*).

Social pressure from work. Three items (see Table 3) were used from the Social Pressure subscale of the Secondary Traumatic Stress Questionnaire (Meda et al., 2012). The original subscale is made up of five items, but two of them were not used in this study because they are more related to the work of health professionals employed in hospitals or emergency services (e.g., "I have difficulty caring for aggressors, drug addicts, drunkards . . ."). The response scale ranges from 1 (*strongly disagree*) to 4 (*strongly agree*).

Contact with death and suffering. The Contact with Death and Suffering subscale of the Nursing Burnout Scale (NBS; Moreno-Jiménez et al., 2000) was used. This scale consists of four items (see Table 3); the response scale ranges from 1 (*strongly disagree*) to 4 (*strongly agree*).

Table 2. Mean Values, Standard Deviations, Internal Consistency Indexes (Cronbach's Alpha), and Bivariate Correlations.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Sex	—	—	—												
2. Age	36.29	10.26	-.05	—											
3. No. of children	0.65	0.87	.20**	.56**	—										
4. Years of experience in the field	8.79	7.85	-.00	.64**	.36**	—									
5. Contact with COVID patients	—	—	.04	-.03	.00	-.06	—								
6. Workload	3.13	0.43	-.0	-.09	-.10	-.00	-.10	(.57)							
7. Social pressure from work	2.55	0.68	.04	-.10	-.10	-.03	.15*	.28**	(.57)						
8. Contact with death and suffering	3.43	0.50	.10	-.03	.03	-.03	-.11	.31**	.20**	(.73)					
9. Lack of staff and PPEs	3.23	0.68	.03	.02	-.02	-.00	-.05	.28**	.19**	.26**	(.65)				
10. Coworker support	2.98	0.67	-.03	-.13*	-.03	.03	.05	.12	.07	.11	.03	(.86)			
11. Supervisor support	2.81	0.80	.08	-.06	.05	-.10	-.03	-.06	-.00	.13	-.04	.43**	(.89)		
12. Secondary traumatic stress	2.74	0.39	.06	-.07	-.09	-.00	-.17**	.40**	.47**	.45**	.33**	.04	-.11	(.78)	
13. Fear of contagion	2.81	0.70	.11	-.09	-.02	.01	.00	.19**	.21**	.27**	.45**	.09	.06	.38**	(.72)

Note. Sex was coded with 1 = male, 2 = female; contact with patients with COVID was coded with 1 = yes, 2 = no. In all scales, the response range is between 1 and 4. Cronbach's alphas appear in the diagonal between parentheses. PPE = personal protective equipment.

* $p < .05$. ** $p < .01$.

Table 3. Analysis of the Items Related to Work Stressors and Resources in the Face of the COVID-19 Crisis.

Variable	\bar{X} Total workers (N = 228)	\bar{X} Workers in contact with COVID patients (n = 156)	\bar{X} Workers without contact with COVID patients (n = 70)	t
1. Sometimes due to lack of time decisions are made about the patient based on unclear criteria (WL)	2.80	2.79	2.83	-.36
2. When a notice is received the pressure to get there in the shortest possible time is very great (WL)	3.18	3.24	3.09	1.74
3. Sometimes we attend to second notices with no time to recover from the previous one (WL)	3.04	3.13	2.90	2.30*
4. Having to work so many hours consecutively in an emergency situation does not benefit us physically or mentally (WL)	3.56	3.60	3.47	1.36
5. In our service the time pressure to attend to the notices is very high (WL)	3.05	3.06	3.04	.14
6. It makes me uneasy that there is so much confidence in the professional that you must be (SPW)	2.65	2.58	2.77	-1.55
7. I am concerned about possible judicial actions against my actions as a professional (SPW)	2.30	2.28	2.30	-.12
8. The most annoying thing is the reproaches of the patients' relatives (SPW)	2.72	2.74	2.64	.75
9. The lack of personal protective equipment against the virus distresses me (LSPPE)	3.18	3.13	3.24	-.91
10. The lack of staff needed to care for patients distresses me (LSPPE)	3.33	3.41	3.17	2.19*
11. It hurts me that patients don't get family visits (CDS)	3.50	3.52	3.49	.36
12. It affects me to see how a relative of the patient suffers (CDS)	3.48	3.51	3.46	.55
13. It affects me to see a patient die whose disease process I have witnessed (CDS)	3.56	3.58	3.49	1.15
14. I'm quite affected by the death of an elderly patient (CDS)	3.23	3.24	3.19	.49

Note. In all scales, the response range is between 1 and 4. Two participants did not answer the question whether they worked in contact with COVID-19 patients. So, there is a discrepancy between the n of the subsamples (156 and 70) and the total sample (228). WL = workload; SPW = social pressure from work; CDS = contact with death and suffering; LSPPE = lack of staff and personal protective equipment.

* $p < .05$.

Job resources

Lack of staff and personal protection equipment. Two ad hoc items (see Table 3) were designed for this research: one referred to the lack of material resources and the other referred to the lack of personnel that generate anxiety to professionals nowadays. Responses range from 1 (*strongly disagree*) to 4 (*strongly agree*).

Coworker and supervisor support. Six items from the Social Support at Work subscale of the Job Content Questionnaire (Karasek et al., 1998) were used. Specifically, three items were used to assess coworker support (e.g., "People I work with took a personal interest in me"), and three additional items were applied to assess Supervisory Support (e.g., "My supervisor is helpful in getting the job done"). The original subscale is made up of nine items. However, since the content among the items is very similar and, to reduce the fatigue of the participants, only three items were selected for each dimension (those with a higher factorial weight in the original scale). Responses range from 1 (*strongly disagree*) to 4 (*strongly agree*).

Main outcome variables

Secondary traumatic stress. The Secondary Traumatic Stress Syndrome subscale of the Secondary Traumatic Stress Questionnaire (Meda et al., 2012) was used. This subscale

consists of 14 items with responses ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). A global index of secondary traumatic stress was calculated from the mean of the items corresponding to the dimensions of *Emotional fatigue* (e.g., "I am emotionally overwhelmed by this job"), *Shaking of beliefs* (e.g., "My work has made me see that the world is unfair"), and *Symptomatology* (e.g., "During some interventions, you get to experience all kinds of feelings"). The response scale ranges from 1 (*strongly disagree*) to 4 (*strongly agree*).

Fear of contagion. Three ad hoc items were designed for this research (e.g., "I am constantly thinking about the possibility of catching the virus"; "I am afraid of spreading the virus to my loved ones or users that I care for"). The response scale ranges from 1 (*strongly disagree*) to 4 (*strongly agree*).

Analytic Strategy

The following analyses were conducted: (a) a descriptive analysis of the variables (means and standard deviations); (b) Pearson correlation analysis; (c) Student's *t*-tests for independent samples to analyze the mean differences between nursing home workers where COVID-19 cases had been diagnosed compared with those working in facilities that were free of them; (d) one-factor analysis of variance (ANOVA) test (and

post hoc Tukey tests) to check the difference in means on the criterion variables between three groups (Group 1, doctors and nurses; Group 2, nurse aides; Group 3, other professionals); and (e) hierarchical regression analyses to study the contribution to the explained variance of the predictor variables on each of the criterion variables. Regression analyses were performed separately for the sample of nursing homes with COVID-19 cases and the sample of nursing homes free of cases to verify if their explanatory power varied in the different samples. All variables were centered to reduce the problem of multicollinearity. The reliability of the scales used was established through Cronbach's alpha index. Effect sizes for the Student *t*-tests were estimated with Cohens' *d*, for which values of .20, .50, and .80 represent small, medium, and large effects, respectively (Cohen, 1988). All data were analyzed with the SPSS 26.0 program.

Results

Descriptive Data and Correlations

Table 2 shows mean values, standard deviations, correlations, and Cronbach's alpha for all variables. As it can be seen, the mean values obtained in the Likert-type 1 to 4 scales were between moderately high and very high. In this sense, the high average of *workload* ($M = 3.13$), *contact with death and suffering* ($M = 3.43$), and *lack of staff and PPE* ($M = 3.43$) stand out. Workload stressors (i.e., *workload*, *social pressure*, and *contact with death and suffering*) were related to *secondary traumatic stress* ($r = .40$, $p < .01$; $r = .47$, $p < .01$; $r = .45$, $p < .01$, respectively), and also to *fear of contagion* ($r = .19$, $p < .01$; $r = .21$, $p < .01$ and $r = .27$, $p < .01$, respectively). As for job resources, only *lack of staff and PPE* were associated with *secondary traumatic stress* ($r = .33$, $p < .01$) and with *fear of contagion* ($r = .45$, $p < .01$). In addition, *secondary traumatic stress* and *fear of contagion* were significantly related ($r = .38$, $p < .01$).

Mean Difference Analysis

The results of the *t*-test for independent samples reflected that professionals in contact with patients who had tested positive for COVID-19 showed higher levels of *secondary traumatic stress* than professionals working at nursing homes with no cases thus far detected ($M = 2.80 > M = 2.62$; $t = 3.05$, $p < .01$, $d = .46$). Nonetheless, the mean values in both groups were moderately high (Table 4).

The differential analysis of the items related to work stressors and lack of staff and PPE against COVID-19 show that all the averages obtained were moderately high and very high in the whole group of participants (Table 3). In addition, those workers in contact with COVID-19 patients showed higher means in relation to Item 3 (*workload*, that is, "Sometimes we attend to second notices with no time to

recover from the previous one"), and in relation to Item 10 of the *lack of staff and PPE* variable (i.e., "The lack of staff needed to care for patients distresses me"), these differences being statistically significant ($t = 2.30$, $p < .05$, $d = .32$; $t = 2.19$, $p < .05$, $d = .31$, respectively).

Finally, the ANOVA results revealed mean differences in the *workload* variable ($F = 6.67$, $p < .01$), and in the *supervisor support* variable ($F = 3.50$, $p < .05$) among the three sample groups (i.e., Group 1: doctors and nurses; Group 2: nursing aides; Group 3: other professionals). Specifically, Tukey's post hoc test revealed that these differences were at a significant level between the group of doctors and nurses (Group 1) and the group of other professionals (Group 3), the former experiencing higher levels of *workload* ($M = 3.28$) than the latter ($M = 3.03$). It was also observed that the group of nurse aides perceived more support from the supervisor ($M = 2.93$) than the group of doctors and nurses ($M = 2.58$).

Hierarchical Regression Analysis

Since there were significant differences in *secondary traumatic stress* between those workers in contact with COVID-19 patients and those who were not, the corresponding regression analyses were performed separately. These analyses revealed that, in the case of *secondary traumatic stress* among workers in contact with COVID-19 patients (see Table 5), work stressors added 35.5% of the explained variance in Model 2, with *workload* ($\beta = .15$, $p < .05$), *social pressure from work* ($\beta = .32$, $p < .001$), and *contact with death and suffering* ($\beta = .37$, $p < .001$) being significant. In Model 3, job resources added 13.9% of the variance explained through *lack of staff and PPE* ($\beta = .33$, $p < .001$) and *supervisor support* ($\beta = -.21$, $p < .001$). Finally, in Model 4, interactions added 6.5% variance. Specifically, the interactions between *workload* and *supervisor support* ($\beta = -.24$, $p < .01$), and between *social pressure from work* and *coworker support* ($\beta = -.22$, $p < .001$) were significant. In Figures 1 and 2, we can see the direction of the slopes of the two interactions. Figure 1 shows that the relationship between *workload* and *secondary traumatic stress* was statistically significant and descending for the high levels of *supervisor support* (slope gradient = $-.245$, $t = -2.56$, $p < .05$), and significant and ascending for low levels of support (slope gradient = $.297$, $t = 2.27$, $p < .05$). That is, perceiving support from supervisors helped buffer the negative effect of workload on secondary traumatic stress; conversely, not perceiving it amplified its negative effect. However, in Figure 2, it was observed that the relationship between *social pressure from work* and *secondary traumatic stress* interacted only in a statistically significant and ascending manner for the low levels of coworker support (slope gradient = $.345$, $t = 5.45$, $p < .001$), not being so for high levels of support (slope gradient = $-.013$, $t = -0.206$, $p > .05$). In other words, lower levels of support from coworkers amplify the negative effect of social pressure from work on traumatic stress.

Table 4. Mean Differences Between Workers in Contact Versus Workers Without Contact With COVID-19 Patients and Between Different Occupational Groups.

Variable	\bar{X} Workers in contact with COVID patients (n = 156)	\bar{X} Workers without contact with COVID patients (n = 70)	t	Group 1 (doctors and nurses) (n = 60)	Group 2 (nurse aides) (n = 68)	Group 3 (other professionals) (n = 99)	F
1. Workload	3.16	3.06	1.59	3.28 ⁽³⁾	3.15	3.03	6.67**
2. Social pressure from work	2.53	2.57	-0.35	2.66	2.44	2.57	1.57
3. Contact with death and suffering	3.46	3.40	0.81	3.41	3.40	3.47	0.47
4. Lack of staff and PPEs	3.27	3.20	0.66	3.18	3.28	3.27	0.40
5. Coworker support	2.97	2.97	0.02	3.03	2.94	2.97	0.34
6. Supervisor support	2.84	2.72	1.00	2.58 ⁽²⁾	2.93	2.86	3.50*
7. Secondary traumatic stress	2.80	2.62	3.05**	2.83	2.69	2.73	2.13
8. Fear of contagion	2.84	2.72	1.14	2.85	2.90	2.72	1.46

Note. Superscripts (2) and (3) indicate the comparative group with which Group 1 showed significant differences; Group 1: doctors and nurses; Group 2: nurse aides; Group 3: other professionals (i.e., social workers, psychologist, physiotherapists, occupational therapist, geriatric assistants, and managers). PPE = personal protective equipment.

* $p < .05$. ** $p < .01$.

Table 5. Regression Analysis on Criterion Variables Based of Workers in Contact Versus Without Contact With Patients With COVID-19.

Criteria	Workers in contact with COVID patients								Workers without contact with COVID patients							
	Secondary traumatic stress				Fear of contagion				Secondary traumatic stress				Fear of contagion			
	Step 1	Step 2	Step 3	Step 4	Step 1	Step 2	Step 3	Step 4	Step 1	Step 2	Step 3	Step 4	Step 1	Step 2	Step 3	Step 4
Sex	-.13	-.02	-.04	-.01	-.06	-.03	-.03	-.03	.09	-.12	-.12	-.13	-.12	-.21	-.19	-.29*
Age	.01	-.03	.05	.12	.33**	.38***	.32**	.32**	.32	.12	.10	.11	-.04	-.10	-.03	-.13
Relationship	-.07	-.01	-.07	-.05	.05	.07	-.00	-.06	.08	.03	.05	.00	.12	.07	.06	.04
No. of children	.18	.13	.10	.07	.01	-.00	-.03	-.02	-.11	.01	.00	.02	-.05	-.00	.00	.16
Years of experience	-.01	.05	.01	-.05	-.19	-.15	-.21*	-.17	-.12	-.01	-.02	-.04	.05	-.00	.02	.00
WL	.15*	.05	.05	.02	.13	.13	-.00	.01		.44***	.42***	.46***		.10	.17	.21
SPW	.32***	.24***	.24***	.28***	.11	.03	.03	.03		.37***	.40***	.38***		.07	.03	.04
CDS	.37***	.34***	.34***	.35***	.17*	.12	.14	.14		.16	.23***	-.05		.30	.18	-.10
Lack of SPPE			.33***	.33***		.47***	.52***	.52***		-.16	-.02	.10			.35**	.577
CWS		-.03	-.03	-.02		.01	.01	.01		-.02	-.11	.04		-.30	-.30	-.08
SPS		-.21***	-.21***	-.24***		-.08	-.09	-.09		-.11		-.16		.37**	.37**	.18
WL × Lack of SPPE				.03			.00	.00				-.12				-.12
WL × CWS				.15			.00	.00				.22				.41
WL × SPS				-.24**			-.15	-.15				-.35				-.44
SPW × Lack of SPPE				.05			-.16	-.16				-.18				-.02
SPW × CWS				-.22***			.02	.02				-.01				.08
SPW × SPS				.08			-.02	-.02				.24				-.00
CDS × Lack of SPPE				.03			-.07	-.07				-.02				-.27
CDS × CWS				.10			.09	.09				-.47				-.79*
CDS × SPS				.08			.09	.09				.50				.62
R ²	.052	.407	.546	.611	.076	.166	.359	.419	.055	.580	.614	.711	.038	.172	.350	.561
△ R ²	.052	.355**	.139***	.065*	.076	.091**	.192***	.060	.055	.525***	.033	.097	.038	.134*	.179**	.211*

Note. WL = workload; SPW = social pressure from work; CDS = contact with death and suffering; SPPE = staff and personal protective equipment; CWS = coworker support; SPS = supervisor support.
* $p < .05$. ** $p < .01$. *** $p < .001$.

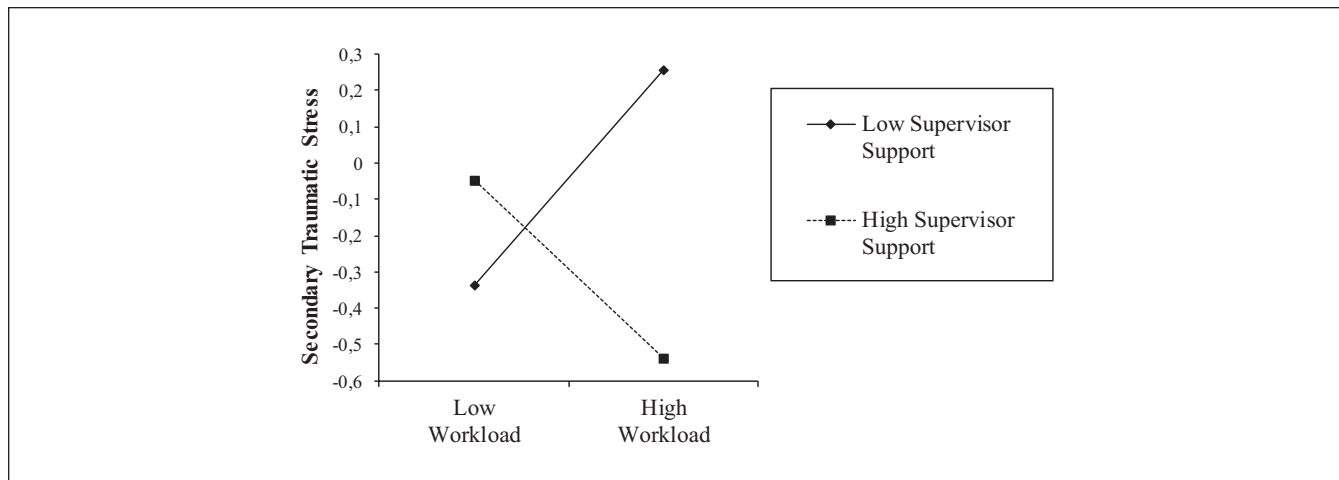


Figure 1. Interaction effects of workload and supervisor support in predicting secondary traumatic stress.

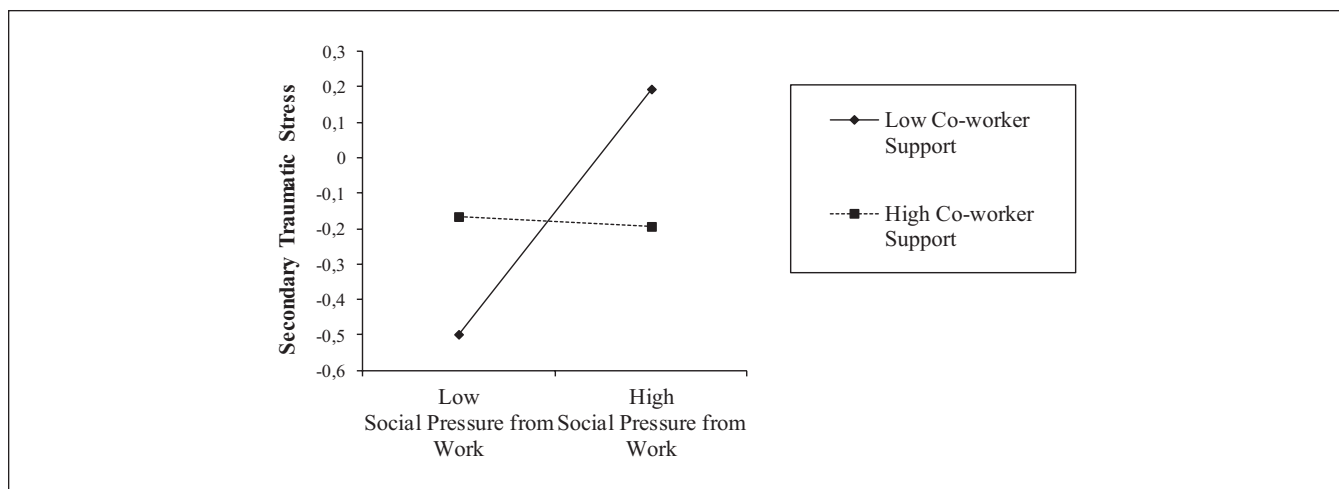


Figure 2. Interaction effects of social pressure from work and coworker support in predicting secondary traumatic stress.

Regarding *fear of contagion* among workers in contact with COVID-19 patients (see Table 5), the model that included the sociodemographic variables as control did not prove to be significant when explaining the variance of this variable, although *age* showed a significant association ($\beta = .33, p < .01$), thus remaining in all models. When work stressors were introduced into Model 2, this model was significant, adding 9.1% of explained variance, with the variable *contact with death and suffering* being significant ($\beta = .17, p < .05$). In Model 3, when job resources were included, the model was also significant, adding 19.2% of explained variance, through the *lack of staff and PPE* ($\beta = .47, p < .001$). Finally, in Model 4, when the interactions were introduced, the increase in explained variance was not significant. All variables introduced in the last model (Step 4) explained a total of 41.1% of the *fear of contagion* variance.

In the case of *secondary traumatic stress* among workers without contact with COVID-19 patients (see Table 5), only Model 2 was significant when work stressors were included. Specifically, the variables *workload* ($\beta = .44, p < .001$) and *social pressure from work* ($\beta = .37, p < .001$) were significant. In relation to *fear of contagion* among these workers (see Table 5), Model 3 showed to be significant, when job resources were included, and explaining 35% of the variance of this variable. Specifically, the variables *Lack of staff and PPE* ($\beta = .35, p < .01$) and *supervisor support* ($\beta = .37, p < .01$) were significant. In Model 4, when the interactions were introduced, the model also turned out to be significant, adding 21.1% variance. Specifically, the interaction between *contact with death and suffering* and *coworker support* was significant ($\beta = -.79, p < .05$). In Figure 3, we can see the slope direction of this interaction. Specifically, we can see that the relationship between *contact with death and suffering*

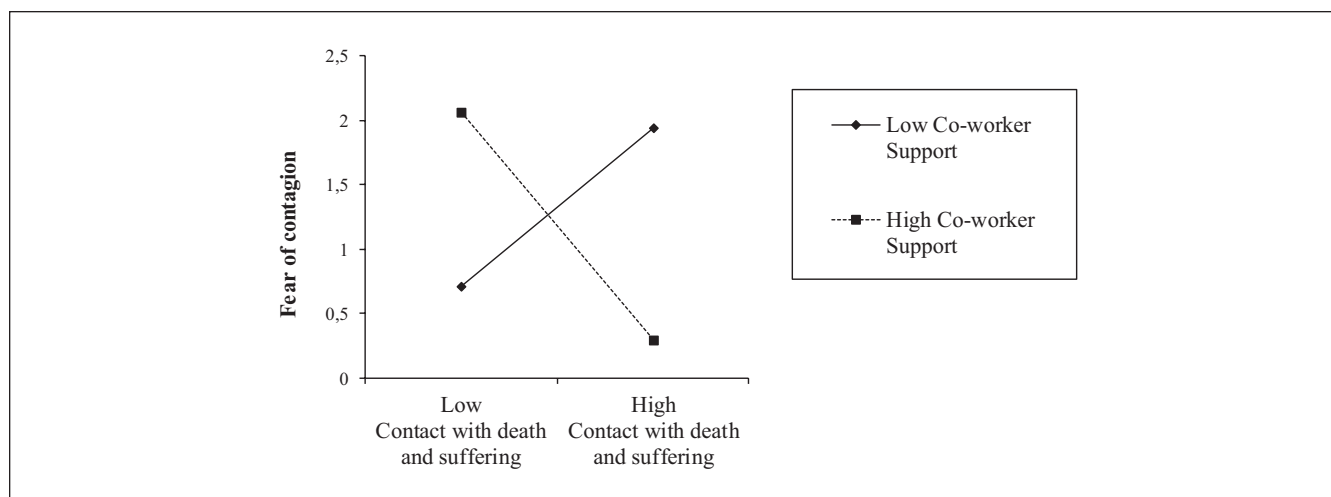


Figure 3. Interaction effects of contact with death/suffering and coworker support in predicting fear of contagion.

and *fear of contagion* interacted in a statistically significant and descending manner for high levels of *coworker support* (slope gradient = -0.883 , $t = -2.09$, $p < .05$), and significant and ascending for low levels of support (slope gradient = $.617$, $t = 2.15$, $p < .01$). In other words, perceiving the support of one's coworkers helped to buffer the negative effect of contact with death and suffering on the *fear of contagion* variable (while not perceiving it amplified its negative effect). All variables introduced in the last model (Step 4) explained a total of 56.1% of the variance in this variable.

Discussion

The objective of this study was to analyze the psychological consequences of the COVID-19 crisis among workers in nursing homes and, specifically, the possible role of certain work stressors and job resources (or lack thereof) in explaining those consequences. Due to the high incidence and fatal consequences of this crisis in nursing homes, it is essential to investigate how it is affecting workers on a psychological level, to establish short-, medium-, and long-term preventive measures (Fischer et al., 2020). As far as we know, this is the first study that explores this important issue in a sample of nursing home workers. In addition, the sample encompasses a variety of professionals that are not limited to medical and nursing professionals, but also other workers that may have been affected by the increasing physical, cognitive, and emotional needs and demands of the residents. The results of this research reflected high levels of workload, social pressure, contact with death and suffering, high levels of concern about the lack of staff and PPEs, and secondary traumatic stress among nursing home workers. These levels are even higher than those obtained by samples of professionals who are in frequent contact with victims, such as emergency health care, civil protection, and firefighters (Meda et al., 2012). Likewise, secondary traumatic stress was higher

among those nursing home workers with positive cases of COVID-19. Doctors and nurses were the most overburdened, probably because they had to make the most difficult decisions in this crisis and because of the increased demand for medical care caused by the virus and its symptoms. Nevertheless, despite some differences found between some occupational groups and between those workers who were in contact with COVID-19 patients and those who were not, they all showed considerable levels of burden and stress, demonstrating the impact that COVID-19 has on occupational psychosocial factors and their consequences on nursing home workers. In Spain, the COVID-19 crisis has hit very hard, and it is possible that not only the direct exposure to COVID-19 is a risk to develop stress and other symptoms, but also the observation of what is happening in other centers and to other professionals. So the fear that it can happen to any of us can also be a risk, producing what is known as vicarious traumatization (Montemurro, 2020).

High doses of suffering, empathic concern, mismatch between demands and job resources, and reduced recovery from occupational stressors could explain the levels of secondary traumatic stress in this sample of workers (Chen et al., 2020; Ludick & Figley, 2017). In fact, regression analysis revealed that greater exposure to suffering and death, social pressure from work, lack of staff and PPEs, and supervisor support explained much of the variance in secondary traumatic stress scores. In addition, the moderation analysis also revealed that social support in these circumstances is essential and helps to decrease secondary traumatic stress levels (Ludick & Figley, 2017). Specifically, employees with a higher workload and greater support from their supervisors experienced less traumatic stress. Furthermore, when workers experience a high social pressure from their work, not perceiving the support of their colleagues increases the levels of secondary traumatic stress. Therefore, providing workers with resources, support, and recognition could increase their

confidence in dealing with difficult situations within nursing homes settings (McCabe et al., 2017), and help reduce the levels of traumatic stress (Quinn et al., 2019).

Moderately high levels of fear of contagion were also found throughout the sample, which is consistent with all the literature emerging from this health crisis (e.g., Cai et al., 2020; Lu et al., 2020). Regression analysis revealed that age was a significant variable in this group: Older professionals experienced more fear, in line with the findings of Simione and Gnagnarella (2020). This may well have to do with the (temporally based) perception of higher vulnerability to the virus.

The lack of staff and PPEs to cope with the crisis was also another variable that in the final model was shown to be significantly associated with higher fear of contagion, as it is the main way by which workers can avoid being infected (Shanafelt et al., 2020). Moreover, moderation analysis for the non-contact group with COVID-19 patients in their nursing homes revealed that higher levels of coworker support were key to reducing the negative impact that high doses of contact with death and suffering had on the fear of contagion. In this way, it seems that through coworker support, workers can share their feelings, reduce emotional tension, gain new perspectives on problem-solving, and mitigate dysfunctional thinking, thus helping to address personal difficulties (Blanco-Donoso et al., 2017).

Limitations and Future Research

The most important limitation of this study lies in the sampling method. As this is not a randomized sample, some biases may appear. For example, if a large cluster of individuals that participated in this study worked in the same nursing home, results could be skewed in that direction (e.g., a nursing home with a high death rate or worker infection rate). Moreover, the group of professionals without contact with positive cases of COVID-19 was somewhat small, so the power and generalization of the results may be compromised. This problem was compounded by including many different types of occupations and staff, from low trained direct care staff, to physicians, to administrators, who have very different experiences. Yet, the sample size of the different occupations was not balanced, so it also affects the representativeness of the results. In this regard, future research should improve the sampling technique to avoid possible biases. Despite these limitations, this is the first study carried out in Spain to ascertain the psychological impact of the COVID-19 crisis on nursing home workers, and the results provide an early snapshot of the psychosocial situation of these workers.

Second, this is a cross-sectional study, therefore, no causal relationships can be established among the variables analyzed. It will be necessary to carry out longitudinal studies that allow for analysis of the evolution of the variables studied here to see their impact on the health and well-being of the workers in the medium and long term.

Third, there were three subscales that presented somewhat low Cronbach's alpha indices: *workload* ($\alpha = .57$), *social pressure from work* ($\alpha = .57$), and *lack of staff and PPEs* ($\alpha = .65$). Some authors consider these indices acceptable when dealing with scales that have not previously been used in a specific population and with a reduced number of items. However, we decided to calculate the average inter-item correlations in these three specific scales (a statistic that is independent of the number of items). These correlations were within the recommended range of .15 to .50 (Clark & Watson, 1995). With these considerations in mind, it would be very advisable in the future to adapt the secondary traumatic stress scales to the field of work in nursing homes.

Finally, further research could also examine how workers' personal resources (e.g., hope, resilience, or self-efficacy) could help further mitigate the negative impact of work stressors against the COVID-19 crisis, and even to experience post-traumatic growth.

Practical Implications

The urgent need for the implementation of psychosocial prevention programs that help to mitigate psychological disorders in this working population is underlined (Greenberg et al., 2020). The experience of secondary traumatic stress is not a psychological disorder in itself but rather a psychosocial risk derived from contact with the trauma. Early intervention can help prevent the development of a psychological disorder later on. However, psychosocial interventions should be extended beyond the acute period of the crisis, as post-traumatic stress and some emotional problems are likely to have a high incidence in the future among our health professionals (Duan & Zhu, 2020). Such programs could help prevent burnout and even increases in currently rising drop-out rates.

The results of this research highlight the importance of providing these professionals with the necessary material resources (PPEs) in their units to protect themselves from the infection, and thus reduce their anxiety and concern about infecting themselves, their loved ones, or the residents of the facilities. The availability of these resources is likely to increase workers' sense of self-efficacy and personal control, and reduce their stress levels (Shanafelt et al., 2020). Also important is the implementation of specific psychological techniques such as debriefing and emotional ventilation (Chen et al., 2020). The results also point out to the need of promoting reduced workload through increased staffing, team support, and greater group cohesion. The current situation requires collective coping with a universal stressor, such as the current pandemic. The implementation of these measures can be expected to have a positive impact on the quality of care toward the older people living in these homes.

Conclusion

The nursing home professionals who participated in this study showed high levels of fear of contagion and secondary traumatic stress when faced with the COVID-19 crisis. Stressors and job resources had a direct and indirect effect on these psychological consequences. There is an urgent need to implement prevention measures to avoid more serious consequences in the medium and long term.

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Ethics Approval

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