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Health-related factors of psychological distress during the COVID-19 pandemic among non-health workers in Spain

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ABSTRACT

Background: Non-health workers engaged in essential activities during the pandemic are less researched on the effects of COVID-19 than health workers.
Objective: to study the differences between those who work away from home and those who do so from home, when the effects of fear of contagion cross with those of confinement, about the psychological distress during the COVID-19 in Spain.
Design: Observational descriptive cross-sectional study.
Data sources: The study was carried out receiving 1089 questionnaires from non-health workers that were working away from home and doing so from their homes. The questionnaire included sociodemographic and occupational data, physical symptoms, self-perceived health, use of preventive measures and possible contacts, and the Goldberg GHQ-12.
Results: 71.6% of non-health female workers and 52.4% of non-health male workers had psychological distress, with differences among those working away from home and those working from home. The level of psychological distress among non-health workers is predicted by 66.5% through the variables: being a woman, 43 years old or younger, having a home with no outdoor spaces, poor perception of health, number of symptoms, and having been in contact with contaminated people or material. Among workers who work away from home, being self-employed is another predictive variable of distress.
Conclusion: More than the half of the sample showed inadequate management of the psychological distress. There are modifiable factors which provide necessary elements to support a positive attitude of the workers, such as: knowledge of hygiene, transmission of the virus, protective measures, and social distancing measures.

1. Introduction

The origin of the current pandemic began on 31 December 2019, when a total of 27 cases of unknown pneumonia was reported in Wuhan, Hubei Province, China, confirming SARS-CoV-2 as a causing agent on 7 January 2020 (WHO, 2020a). One thing that differs from previous epidemics is the updating of available information on confirmed cases and mortality on a global level, such as that provided by the Johns Hopkins University website (Johns Hopkins University, 2020). On 13 June 2020, 7.533.117 cases had been declared worldwide, 2.336.040 cases in Europe and 243.605 cases of COVID-19 in Spain, being Spain one of the countries with the highest number of cases declared (Spanish Government, 2020).

In a pandemic situation, the way health authorities communicate to the population the available information on risks, treatments, vaccination opportunities, or the need for preventive measures may lead to levels of anxiety that determine success or failure to control the current pandemic (Asmundson and Taylor, 2020; Chen et al., 2020). While it is

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true that the world is facing a new type of virus, of unknown and unpredictable behaviour, previous epidemics can be used to understand the phenomena that may occur in the current situation (Edelman et al., 2020; Lee et al., 2007).

The Spanish Health Authorities have been changing the recommendations on preventive measures that the population had to comply with throughout the pandemic period. At the beginning, masks and gloves were only recommended for health workers at risk of high exposure to COVID-19 patients, then passing to other workers exposed to potential contagion, and only at the end of the pandemic the use of masks became mandatory in all closed spaces and establishments, and in public spaces where an interpersonal distance of two metres could not be maintained, discouraging the use of gloves for the general population (Benavides, 2020). The main reason for not advising the widespread use of masks may be in the unavailability of personal protective equipment worldwide. Therefore, in many essential workplaces, such as those dealing with food distribution, it was common for workers not to wear a mask in the exercise of their duties. It has also been observed that the perception of proper protection is associated with common mental health disorders, post-traumatic stress disorder, poorer global health, and emotional problems (Simms et al., 2020; Videgaard, 2020).

The effects of the COVID-19 pandemic on the physical and mental health of the population are the subject of a large number of articles, especially regarding the effects on health professionals (García-Iglesias et al., 2020). As has been proven in previous epidemics such as SARS-CoV, in 2002, MERS-CoV, in 2012, or Ebola, between 2014 and 2016, the effects on mental health and stress have been important among this group (Schwartz et al., 2020; Wu et al., 2009) given the need to take on the challenge of managing a dangerous problem in terms of health and enormous uncertainty, as the effects are unknown until now. Health workers are at increased risk of developing the disease (Wu and McGoogan, 2020) and spreading it (Chang et al., 2020; Instituto Carlos III, 2020) because of the proximity during treatment of infected people. In this line, it is thought that work stress can weaken their immune system and, along with close contact with the infected, can lead to exposure to a higher viral load (Rose, 2020). However, although it is true that health professionals must be a priority research group, it is no less true that many other professionals who practice activities that are considered essential have been exposed to possible contamination of the virus (Sim, 2020), to transmit the virus to their relatives, and to be stigmatised, without being reflected in specific research or publications. Other activities such as treating the sick face-to-face and being responsible for their healing are only typical of health workers.

Protocols have been developed and published to assess the risk factors associated with COVID-19 in workplaces, in many cases targeting health centres (WHO, 2020b) although the same organisation has published another protocol for all workers so as to keep workplaces free from contagion (WHO, 2020c; UK Government, 2020). Guides have also been published to assist physicians in the management of sick leaves and return to work (Rueda-Garrido et al., 2020; OSHA, 2020), or in the rehabilitation of workers after overcoming the disease (Barker-Davies et al., 2020), after discovering the importance of not delaying the start of rehabilitation more than 30 days after the acute phase (NICE, 2017). In Spain, decisions for return to work have been affected by the unavailability of tests for the detection of the disease or the logical uncertainty regarding the validity of such tests (Wang et al., 2020; Ranka et al., 2020), which has forced a permanent review of all protocols and guides following the continuous changes found in scientific evidence. Health and safety services have had to adapt to new needs arising from mobility restrictions (Ranka et al., 2020).

Within the non-health workers' collective, two groups must be distinguished: essential and non-essential workers. Workers belonging to essential services have followed their normal work activities some of which have been safety, cleaning, care for the elderly or disabled, production, distribution and sale of products, etc. On the contrary, there is the group of non-essential workers who have had to continue working from home through telework, and others who have had to temporarily interrupt their professional activity because they have not been able to virtualise it. In the first studies developed in China, the effects of confinement (Brooks et al., 2020) were analysed and people who had remained active during this period showed better health and well-being outcomes, as compared to those who had not become infected or stopped working during confinement (Zhang et al., 2020).

Telework has been greatly enhanced by confinement and is expected to become a working modality much more widely used than before the pandemic. As in past epidemics, its negative and positive health effects are known (Aguilera et al., 2016; Messenger et al., 2017; Kim et al., 2015). Among the activities with positive results experiences that, as a priori, were unimaginable, we find virtual telepsychiatry clinics (Yellowlees et al., 2020).

Journal editorials have been published which presume the effects of COVID-19 on non-health workers and technical documents to prevent their negative health effects, and where those responsible for health issues management are alerted of the psychological and psychosocial consequences of the situation (Burdorf et al., 2020), but there are not many publications including specific data. The objective of this study was to analyse the effects on this group, describing the health impact as a result of the SARS-CoV-2 pandemic and differentiating between those who do their work away from home and those who do so from home in order to identify effective strategies and interventions to reduce the negative effects on their health.

2. Materials and methods

2.1. Design

Observational descriptive cross-sectional study design.

2.2. Sample

The sample consisted of 1089 non-health workers, of which 494 worked away from home as they were part of the so considered essential workers during the pandemic period, and 597 who worked from home. The following inclusion criteria were established: to be a currently active worker, to be 18 years of age or older, and to have accepted the informed consent. As exclusion criteria: not being located in Spain at the time of answering the questionnaire, being a minor, and being a healthcare worker.

2.3. Instruments

The used questionnaire included questions adapted from previous studies (Wang et al., 2020) aimed at collecting sociodemographic data on age, level of studies, sex, marital status, type of company (public, private, or self-employed), type of housing: with or without outdoor spaces, having children under 16 or with disabilities, and whether working away from home or working from home. To assess the level of psychological distress, and according to the degree of mental health and psychological adjustment, the Goldberg GHQ-12 General Health Questionnaire was used, a self-administered scale of 12 items which allows screening of non-psychotic psychiatric disorders (Goldberg et al., 1997). The final scoring ranges from 1 to 12, and each item has four possible answers, getting zero points in options 1 or 2, and 1 point in options 3 or 4. Values equal to or greater than 3 were considered to evidence the presence of psychological adjustment, obtaining an internal consistency index (Cronbach's Alpha of 0.869).

Self-perceived health was collected through an item of 5 possible responses ranging from very bad to very good, which is known to be a great predictor of morbidity (Eriksson et al., 2001) and is included in most health surveys, in studies on COVID-19 (Wang et al., 2020), and on previous pandemics (Main et al., 2011) where the variable was categorized distinguishing an optimal self-perceived health from a regular or

lousy perception. To understand the degree of physical and mental health, the participants were questioned about whether they had any chronic illness, were taking any medication, had been hospitalised in the last 14 days, or needed medical attention by a health service in the last 14 days. To do this, 5 items of dichotomous response (Yes/No) were created, starting from the study by Wang et al. (2020), to which a question about whether the respondent had been performed any diagnostic tests (Yes/No) was added.

Based on information provided by the World Health Organization on the most common physical symptoms associated with COVID-19, the participants were asked about their presence over the past 14 days: cough, headache, rhinitis, fever, myalgia, dizziness, sore throat, chills, diarrhoea, or breathing difficulties. To learn about the use of preventive measures, they were asked about: covering their mouth using their elbow when coughing or sneezing, avoid sharing utensils (e.g. forks) during meals, washing their hands with soap and water, washing their hands with hydroalcoholic solution, washing their hands immediately after coughing, touching their nose or sneezing, washing their hands after touching potentially contaminated objects , wearing a mask regardless of the presence or absence of symptoms, and leaving at least one and a half metres between others. Items with five possible responses from 1 (Never) to 5 (Always) were used to measure these variables.

Regarding contact history in the last 14 days, three items were included to evaluate possible contact (more than 15 min less than two metres away) or casual contact with confirmed infected people, or contact with people or materials suspected of being infected, as well as to state the existence of an infected family member or co-worker.

2.4. Procedure

Through a literature review on publications of previous epidemics, a first draft questionnaire was prepared to be studied by a group of 10 health professionals consisting of three psychologists, four nurses, and three doctors. Once the possible modifications were made, 57 people were chosen by sampling convenience for a piloting, of which 50.9% were men, 56.1% were married, with an average age of 42.10 years (SD = 11.09), and 57.9% of them had postgraduate studies. No doubts or comprehension issues arose about the questionnaire questions. The questionnaires were collected between March 26, 2020, thirteen days after the declaration of the State of Alarm in Spain, and April 26, 2020. For the dissemination, they were asked to collaborate with the General Council of Physicians, General Council of Nursing, National Mental Health Nursing Association, Beturia Andalusian Foundation for Health Research, among other professional groups. Different social networks were also used. The online survey platform Qualtrics® was put in practice.

2.5. Data analysis

An exploratory analysis of the data allowed data cleaning. The descriptive statistic was then presented as frequencies, mean, and standard deviation, depending on the variable type. Student's chi-squared association and T-tests for independent samples were used to contrast the existence or not of a relationship between the different variables (sociodemographic, symptomatologic, preventive, …) with regard to the presence or not of psychological distress, distinguishing the complete sample of non-health workers and those who worked away or from home.

Binary logistic regression analysis was used to build a valuation model that would allow studying whether there was psychological distress and identifying the variables that played a relevant role. To verify the adequacy of the model, different measures of goodness of fit were used: Hosmer-Lemeshow test, percentage of correctly classified values, sensitivity, specificity… The inclusion of the variables was performed through statistical significance tests, the Odd Ratios (OR) were estimated, and confidence intervals were provided for this association measure.

Finally, three models were presented: one for the total number of health workers, and two others distinguishing between those who worked away or from home. The choice of final models was based on an optimisation of the effects accuracy, which was reflected in a lower confidence interval of 95% for the values of the coefficients resulting from the model, and more advantages in terms of the quality of the final variables, their importance, and the simplicity of the model. All analyses were carried out with the SPSS 26.0 statistical software package (IBM, Armonk, NY).

2.6. Approval

The study has the mandatory favourable report by the Research Ethics Committee of Huelva, under the Regional Ministry of Health of Andalusia (PI 036/20), which has verified that it complies with all the principles of ethics set out in the Helsinki Declaration. All data were collected anonymously and treated confidentially. Participants signed an informed consent, stating they were aware of the objectives of the study and agreed to participate in the study voluntarily.

3. Results

3.1. Psychological distress

Table 1 shows how 65.1% of all non-health workers had psychological distress (GHQ-12 cut point ≥ 3), with M = 4.51 (SD = 3.42), being slightly higher the percentage among those who worked away from home (67.3%), with M = 4.61 (SD = 3.39) than those who worked from home M = 4.44 (SD = 3.45), while not being this a statistically significant difference.

The highest values were related to the item "Have you been able to enjoy your normal activities every day?" M = 2.74 (SD = 0.90), and the item "Have you felt constantly overwhelmed and stressed?" M = 2.67 (SD = 0.90). The lowest value was obtained in the item "Have you seen yourself as a worthless person?" M = 1.36 (SD = 0.72). When comparing these values among workers who work away from or those who do so from home, regarding the item "Have your concerns caused you to lose a lot of sleep?", this difference is more statistically significant among those who work away from home, M = 2.58 (SD = 0.96), than among those who do so from home, M = 2.44 (SD = 0.94), with p = .018 value. Also statistically significant is the difference found as regards the item "Have you felt unhappy or depressed?", which is also higher among those who work away, M = 2.48 (SD = 1.01), as compared to those working from home, M = 2.35 (SD = 0.96), with p = .031 value.

3.2. Sociodemographic variables and psychological distress

Table 2 shows how 71.6% of women have distress, while this percentage drops to 52.4% in men, a difference that is also statistically significant in both workers working away from home and those doing so from home. Among men who work from home, distress is 46.9% lower than in men who do their work away from home (58.4%).

Among younger non-health workers (aged =< 43 years), there is a higher percentage with psychological distress (69.4%) than among older people (60.4%), a difference that is also observed between those working away from home (close to the p = .061 statistical significance) and those who do so from home. In both sexes, the percentages of people with distress is somewhat higher among those who work away than in those who work from home (70.9% men and 62.9% women, versus 68.1% and 58.4%, respectively).

It is noted that living in a house without outside spaces, access to gardens or exterior balconies, acts as a favouring factor for distress. The percentage of non-health workers with distress is 70.7% for those without outside spaces at home, as compared to 63.2% for those with access to the outdoors.

Table 1
Psychological distress: general health questionnaire GHQ-12.

Item	Non-Health Workers (N = 1089) M (SD)	Non-Health Workers Working Away from Home (N = 492) M (SD)	Non-Health Workers Working from Home (N = 597) M (SD)	Students' T	p-value
1. Have you been able to concentrate on what you were doing?	2.64 (0.73)	2.64 (0.70)	2.64 (0.75)	0.083	0.934
2. Have your worries made you lose much sleep?	2.50 (0.95)	2.58 (0.96)	2.44 (0.94)	−2.368	0.018
3. Have you felt like you are performing an important role in life?	2.09 (0.78)	2.06 (0.78)	2.12 (0.78)	1.197	0.232
4. Have you felt able to make decisions?	2.15 (0.66)	2.16 (0.66)	2.15 (0.66)	−0.371	0.711
5. Have you felt constantly overwhelmed and under pressure?	2.67 (0.90)	2.72 (0.90)	2.63 (0.89)	−1.661	0.097
6. Have you felt like you cannot overcome difficulties?	2.09 (0.90)	2.12 (0.92)	2.07 (0.89)	−0.895	0.371
7. Have you been able to enjoy your daily activities?	2.74 (0.90)	2.77 (0.93)	2.71 (0.87)	−1.195	0.232
8. Have you been able to properly cope with your problems?	2.26 (0.63)	2.28 (0.65)	2.24 (0.61)	−0.882	0.378
9. Have you felt unhappy or depressed?	2.41 (0.99)	2.48 (1.01)	2.35 (0.96)	−2.161	0.031
10. Have you lost self-confidence?	1.71 (0.86)	1.71 (0.86)	1.72 (0.87)	0.189	0.850
11. Have you thought you are a useless person?	1.36 (0.72)	1.37 (0.73)	1.36 (0.71)	−0.208	0.835
12. Do you feel reasonably happy considering the circumstances?	2.16 (0.73)	2.20 (0.74)	2.13 (0.71)	−1.581	0.114
GHQ-12 (scoring based on 12)	4.51 (3.42)	4.61 (3.39)	4.44 (3.45)	−0.826	0.409
Cut-off point ≥ 3		N (%)			
YES	709 (65.1)	331 (67.3)	378 (63.3)	1.862	0.172
NO	380 (34.9)	161 (32.7)	219 (36.7)		

Among the workers who carry out their activity away from home, being self-employed is a favouring factor for psychological distress. 78.3% of self-employed people present psychological distress, as compared to private company workers (67.6%) and those of public companies (61.0%), p = .045.

3.3. Physical symptoms in the past 14 days depending on the level of psychological distress

The figures regarding the most common physical symptoms associated with COVID-19 are higher among those with psychological distress; within a range of 0–10, M = 2.11 (SD = 1.83) for workers showing psychological distress versus M = 1.35 (SD = 1.46) for those who do not suffer it, this is for all non-health workers including those who work away from home and those working from home, with $p < 0.001$ in all cases. 28.0% of those working away from home have 3 or more symptoms, rising up to 30.8% in those who work from home. No symptoms are presented in 28.3% of those who work away, and in 26.8% of those who work from home.

Among all non-health workers, people with distress state all the symptoms about which they have been asked in a greater proportion than those who do not suffer psychological distress: fever, dizziness, breathing difficulties, headache, muscle pain, sore throat, rhinitis, and chill, exceeding 70% those stating all the symptoms and 80% those declaring the first three symptoms (Table 3). In the group of non-health workers working away from home, this difference is statistically significant in terms of the following symptoms: muscle pain, dizziness, rhinitis, and chills. However, in the group of participants working from home, there are statistically significant differences regarding the symptoms: headache, myalgia, dizziness, diarrhoea, sore throat, rhinitis, and breathing difficulties (Table 3).

3.4. Association between health-related variables and psychological distress during the COVID-19 pandemic

86.5% of non-health workers stated to have had a good or optimal self-perceived health during the last 14 days. This difference is statistically significant depending on whether workers working from home present psychological distress.

When analysing the variables related to the health status and the presence of psychological distress, the only one that shows a statistically significant difference among workers who perform their activity away from home is that of taking medications (p = .039). This is not the case among workers who work from home.

It should be noted that only 4 people working away from home (0.8%) and 8 of those who work from home (1.3%) have had a COVID-19 diagnostic test performed. 2.2% of those working away from home and 2.8% of those working from home were quarantined when they completed the questionnaire. About 25% had a chronic disease. 6.9% of non-health workers had required care in a health centre, hospital, or clinic during the last 14 days, with 5 cases (0.5%) hospitalised and 2.6% quarantined during that period.

3.5. Variables related to contact history in the past 14 days and psychological distress

Table 4 shows how 26.5% of non-health workers claimed to have had "contact with infected people for more than 15 min or at <2 m away", or "not knowing if this had occurred". There is a statistically significant difference between those who had psychological distress and those who did not (p = .046). The percentage of those who said to have had any contact with "a person or material suspected of being infected" rose to 45.7%, with statistically significant differences between those who had psychological distress and those who did not have it, for both the group of non-health of workers (p = .001) and the sub-group of those working from home (p = .002).

The percentage of those who claimed to have had an infected family member, or not knowing it, was 16.9%, with no statistically significant differences between having or not psychological distress or working away from home or doing so from home.

3.6. Preventive activities and psychological distress

Preventive measures with higher assessment values among non-health workers were: washing hands with soap and water, M = 4.67 (range: 1–5; SD = 0.56); washing hands after touching potentially

Table 2
Association between sociodemographic variables and psychological distress among non-health workers during the pandemic.

	Non-Health Workers (N = 1089)					Non-Health Workers Working Away From Home (N = 492)					Non-Health Workers Working From Home (N = 597)				
		GHQ					GHQ					GHQ			
	N (%)	NO (N = 380)	YES (N = 709)	χ^2	P	N (%)	NO (N = 161)	YES (N = 331)	χ^2	P	N (%)	NO (N = 219)	YES (N = 378)	χ^2	P
Sex															
Male	370 (34.0)	47.6	52.4	39.618	<0.001	178 (36.2)	41.6	58.4	9.921	0.002	192 (32.2)	53.1	46.9	32.940	<0.001
Female	719 (66.0)	28.4	71.6			314 (63.8)	27.7	72.3			405 (67.8)	28.9	71.1		
Age*															
43 Or Less	569 (52.2)	30.6	69.4	9.764	0.002	268 (54.5)	29.1	70.9	3.502	0.061	301 (50.4)	31.9	68.1	5.996	0.014
More Than 43	520 (47.8)	39.6	60.4			224 (45.5)	37.1	62.9			296 (49.6)	41.6	58.4		
Marital Status															
Single	302 (27.7)	34.1	65.9	2.028	0.363	135 (27.4)	34.8	65.2	1.169	0.557	167 (28.0)	33.5	66.5	1.983	0.371
Married or Living with A Partner	680 (62.4)	34.3	65.7			312 (63.4)	31.1	68.9			368 (61.6)	37.0	63.0		
Separate or Divorced or Widow/Er	107 (9.8)	41.1	58.9			45 (9.1)	37.8	62.2			62 (10.4)	43,5	56.5		
Level of Studies															
Upper Secondary School or Lower	240 (22.0)	33.3	66.7	0.330	0.566	169 (34.3)	32.5	67.5	0.004	0.951	71 (11.9)	35.2	64.8	0.075	0.784
University or Higher	849 (78.0)	35.3	65.1			323 (65.7)	32.8	67.2			526 (88.1)	36.9	63.1		
Housing															
Flat/House with Outdoor Space	819 (75.2)	36.8	63.2	5.018	0.025	374 (76.0)	34.5	65.5	2.215	0.137	445 (74.5)	38.7	61.3	2.915	0.088
Flat/House Without Outdoor Space or Others (Hotel, Residence, …)	270 (24.8)	29.3	70.7			118 (24.0)	27.1	72.9			152 (25.5)	30.9	69.1		
You Are															
Self-Employed	115 (10.6)	25.2	74.8	5.575	0.062	69 (14.5)	21.7	78.3	6.211	0.045	46 (7.8)	30.4	69.6	2.727	0.256
Public Worker	408 (37.5)	36.3	63.7			136 (28.5)	39.0	61.0			272 (46.1)	34.9	65.1		
Private Worker	544 (50.0)	36.4	63.6			272 (57.0)	32.4	67.6			272 (46.1)	40.4	59.6		
Children < 16															
Yes	595 (54.6)	36.1	63.9	0.888	0.346	283 (57.5)	32.9	67.1	0.006	0.939	312 (52.3)	39.1	60.9	1.647	0.199
No	494 (45.4)	33.4	66.6			209 (42.5)	32.5	67.5			285 (47.7)	34.0	66.0		
Disability															
No	1067	34.9	65.1	0.021	0.884	479 (97.4)	32.8	67.2	0.023	0.879	588 (98.5)	36.6	63.4	0.237	0.626
Yes	22	36.4	63.6			13 (2.6)	30.8	69.2			9 (1.5)	44.4	55.6		

* Grouped variable based on median value.

Table 3
Association between physical symptoms and self-perceived health among non-health workers during the pandemic.

	Non-Health Workers (N = 1089)					Non-Health Workers Working Away from Home (N = 492)					Non-Health Workers Working from Home (N = 597)				
		GHQ					GHQ					GHQ			
	N (%)	NO (N = 380)	YES (N = 709)	*	p	N (%)	NO (N = 161)	YES (N = 331)	*	p	N (%)	NO (N = 219)	YES (N = 378)	*	p
Fever															
YES	25 (2.3)	16.0	84.0	4.021	0.045	6 (1.2)	16.7	83.3		0.669*	19 (3.2)	15.8	84.2	3.69	0.55
NO	1064 (97.7)	35.3	64.7			486 (98.8)	32.9	67.1			578 (96.8)	37.4	62.6		
Cough															
YES	298 (27.4)	29.2	70.8	5.867	0.015	134 (27.2)	27.6	72.4	2.186	0.139	164 (27.5)	30.5	69.5	3.737	0.053
NO	791 (72.6)	37.0	63.0			358 (72.8)	34.6	65.4			433 (72.5)	39.0	61.0		
Headache															
YES	546 (50.1)	27.8	72.2	23.994	<0.001	244 (49.6)	28.7	71.3	3.580	0.058	302 (50.6)	27.2	72.8	23.903	<0.001
NO	543 (49.9)	42.0	58.0			248 (50.4)	36.7	63.3			295 (49.4)	46.4	53.6		
Myalgia															
YES	270 (24.8)	25.2	74.8	14.897	<0.001	112 (22.8)	24.1	75.9	4.890	0.027	158 (26.5)	25.9	74.1	10.659	0.001
NO	819 (75.2)	38.1	61.9			380 (77.2)	35.3	64.7			439 (73.5)	40.5	59.5		
Dizziness															
YES	116 (10.7)	19.8	80.2	12.973	<0.001	47 (9.6)	19.1	80.9	4.349	0.037	69 (11.6)	20.3	79.7	9.027	0.003
NO	973 (89.3)	36.7	63.3			445 (90.4)	34.2	65.8			528 (88.4)	38.8	61.2		
Diarrhoea															
YES	139 (12.8)	25.2	74.8	6.619	0.010	66 (13.4)	24.2	75.8	2.490	0.115	73 (12.2)	26.0	74.0	4.066	0.044
NO	950 (87.2)	36.3	63.7			426 (86.6)	34.0	66.0			524 (87.8)	38.2	61.8		
Sore throat															
YES	266 (24.4)	25.6	74.4	13.488	<0.001	119 (24.2)	26.9	73.1	2.426	0.119	147 (24.6)	24.5	75.5	12.484	<0.001
NO	823 (75.6)	37.9	62.1			373 (75.8)	34.6	65.4			450 (75.4)	40.7	59.3		
Rhinitis															
YES	184 (16.9)	23.4	76.6	12.945	<0.001	75 (15.2)	22.7	77.3	4.065	0.044	109 (18.3)	23.9	76.1	9.451	0.002
NO	905 (83.1)	37.2	62.8			417 (84.8)	34.5	65.5			488 (81.7)	39.5	60.5		
Chills															
YES	103 (9.5)	21.4	78.6	9.174	0.002	41 (8.3)	14.6	85.4	6.648	0.010	62 (10.4)	25.8	74.2	3.524	0.060
NO	986 (90.5)	36.3	63.7			451 (91.7)	34.4	65.6			535 (89.6)	37.9	62.1		
Breathing difficulties															
YES	61 (5.6)	18.0	82.0	8.087	0.004	22 (4.5)	22.7	77.3	1.045	0.307	39 (6.5)	15.4	84.6	8.149	0.004
NO	1028 (94.4)	35.9	64.1			470 (95.5)	33.2	66.8			558 (93.5)	38.2	61.8		
Self-perceived health															
Regular or lousy	147 (13.5)	17.0	83.0	23.934	<0.001	60 (12.2)	23.3	76.7	2.737	0.098	87 (14.6)	12.6	87.4	25.339	<0.001
Optimal	942 (86.5)	37.7	62.3			432 (87.8)	34.0	66.0			510 (85.4)	40.8	59.2		

* Fisher's exact test.

Table 4
Association between the variables associated with history of contact and psychological distress among non-health workers.

	Non-Health Workers (N = 1089)					Non-Health Workers Working Away From Home (N = 492)					Non-Health Workers Working From Home (N = 597)				
		GHQ					GHQ					GHQ			
	N (%)	NO	YES	χ^2 Statistics	p	N (%)	NO	YES	χ^2 Statistics	p	N (%)	NO	YES	χ^2 Statistics	p
Contact > 15′ <2m with infected person															
No	800 (73.5)	36.6	63.4	3.974	0.046	357 (72.6)	34.2	65.8	1.243	0.265	443 (74.2)	38.6	61.4	2.717	0.099
Yes, or doesn't know	289 (26.5)	30.1	69.9			135 (27.4)	28.9	71.1			154 (25.8)	31.2	68.8		
Casual contact with infected person															
No	706 (64.8)	36.8	63.2	3.301	0.069	313 (63.6)	34.2	65.8	0.835	0.361	393 (65.8)	38.9	61.1	2.502	0.114
Yes, or doesn't know	383 (35.2)	31.3	68.7			179 (36.4)	30.2	69.8			204 (34.2)	32.4	67.6		
Any contact with person or material suspicious of being contaminated															
No	591 (54.3)	39.3	60.7	10.819	0.001	260 (52.8)	35.4	64.6	1.773	0.183	331 (55.4)	42.3	57.7	10.076	0.002
Yes, or doesn't know	498 (45.7)	29.7	70.3			232 (47.2)	29.7	70.3			266 (44.6)	29.7	70.3		
Infected family member															
No	905 (83.1)	34.9	65.1	0.001	0.972	410 (83.3)	32.0	68.0	0.667	0.414	495 (82.9)	37.4	62.6	0.594	0.441
Yes, or doesn't know	184 (16.9)	34.8	65.2			82 (16.7)	36.6	63.4			102 (17.1)	33.3	66.7		

contaminated objects, M = 4.51 (SD = 0.75); and leaving at least one and a half metres of distance (SD = 0.77). Conversely, the measurements with the lowest values were: wearing a mask with or without symptoms, M = 2.62 (SD = 1.55); washing hands with hydroalcoholic solution, M = 3.08 (SD = 1.24); and washing hands after coughing, touching the nose, or sneezing, M = 3.38 (SD = 1.14).

A statistically significant difference is found among those with or without psychological distress in the following measures: washing hands with hydroalcoholic solution (p = .009) and wearing a mask with or without symptoms (p = .009). This difference is also seen in workers who work away from home, but not in those who work from home (Table 5).

3.7. Prediction of psychological distress in non-health workers

In the proposed model for the level of psychological distress experienced among non-health workers, the predictive capacity was 11.3%, correctly classifying 66.5% of non-health workers. Sensitivity (proportion of properly classified professionals without distress) of 25.5% and specificity (proportion of properly classified professionals without distress) of 88.4%. Non-health workers with a fair or poor health perception had 1.881 times (95% CI = 1.154, 3.066) greater risk of psychological distress than those professionals with an optimal perception of health. The risk was also higher among women OR = 1.910 (95% CI = 1.456–2.507) and non-health workers aged 43 years or younger OR = 1.303 (95% CI = 1.002–1.695). Other risk factors were to have a house without outdoor space OR = 1.367 (95% CI = 1.001–1.867), the number of symptoms OR = 1.195 (95% CI = 1.089–1.738), and having been in contact with contaminated people or material OR = 1.332 (95% CI = 1.021–1.738).

The level of psychological distress among non-health workers who work away from home is predicted by the following variables: being a woman OR = 1.787 (95% CI = 1.187–2.690); the number of symptoms OR = 1.241 (95% CI = 1.085–1.421); and being a self-employed worker. Working in a private company acts as a protective factor, as compared to being a self-employed worker, OR = 0.487 (0.256–0.928); and working in a public company compared to being a self-employed worker, also acts as a protective factor: OR = 0.395 (0.199–0.785). These variables predict 67.5% of the effect, R2 = 0.082, a sensitivity of 21.2%, and a specificity of 90.0%.

The level of psychological distress among non-health workers who work from home is predicted by the following variables: being a woman OR = 2.340 (95% CI = 1.606–3.408); living in a house without outdoor space OR = 1.569 (95% CI = 1.034–2.381); having a poor perception of health during the last 14 days OR = 3.132 (95% CI = 1.523–6.441); the number of symptoms OR = 1.179 (95% CI = 1.038–1.338); and having had contact with contaminated people or material OR = 1.512 (95% CI = 1.051–2.176). These variables predict 69.20% of the effect, R2 = 0.163, a sensitivity of 37.9%, and a specificity of 87.3%. The age of 43 years or less is close to the statistical significance OR = 1.403 (95% CI = 0.980–2.008), p = 0.64 (Table 6).

In all three models, the Wald test assessed the individual statistical significance of each of the predictive variables, and the Hosmer-Lemeshow test indicated a good fit of the model, showing no statistical significance, with p-values of 0.928, 0.656, and 0.153 respectively. On the other hand, the omnibus test allowed to assert that the variables included in the models, taken together, help explain the modifications that occur in the probability of having or not psychological distress (p < .001 in the three models).

All three models can be represented by the equation:

$$P(distress) = \frac{1}{1 + e^{-f(x)}}$$

where:

- For non-health workers

$$f(x) = -0.494 + 0.647\ Sex + 0.265\ Age + 0.313\ Housing + 0.632\ Health + 0.178\ Symptoms + 0.287\ Contact$$

- For non-health workers working away from home

$$f(x) = -0.705 + 0.581\ Sex + 0.216\ Symptoms - 0.719\ Privatecomp. - 0.929\ Public\ worker$$

- For non-health workers working from home

Table 5
Contrast between preventive measures and psychological distress among non-health workers during the pandemic.

	Non-Health Workers (N = 1089)					Non-Health Workers Working Away From Home (N = 492)					Non-Health Workers Working From Home (N = 597)				
		GHQ					GHQ					GHQ			
	M (SD)	NO	YES	Students' T	p	M (SD)	NO	YES	Students' T	p	M (SD)	NO	YES	Students' T	p
Covering mouth	4.06 (0.96)	4.07 (0.94)	4.05 (0.97)	0.403	0.687	4.15 (0.90)	4.16 (0.84)	4.15 (0.93)	0.119	0.905	3.98 (1.00)	4.01 (1.00)	3.96 (0.99)	0.577	0.564
Avoid sharing utensils	4.17 (1.22)	4.18 (1.24)	4.17 (1.21)	0.195	0.845	4.26 (1.18)	4.25 (1.26)	4.26 (1.15)	−0.126	0.899	4.10 (1.24)	4.13 (1.22)	4.08 (1.26)	0.477	0.633
Washing hands with soap and water	4.67 (0.56)	4.68 (0.56)	4.67 (0.56)	0.297	0.766	4.71 (0.54)	4.74 (0.52)	4.70 (0.54)	0.801	0.424	4.63 (0.58)	4.63 (0.58)	4.64 (0.58)	−0.152	0.880
Washing hands with hydroalcoholic solution	3.08 (1.24)	2.94 (1.24)	3.15 (1.23)	−2.627	0.009	3.31 (1.21)	3.04 (1.23)	3.44 (1.17)	−3.419	0.001	2.89 (1.23)	2.87 (1.25)	2.90 (1.23)	−0.286	0.775
Washing hands after coughin, touching the nose, or sneezing	3.38 (1.14)	3.35 (3.40)	3.40 (1.14)	−0.716	0.474	3.47 (1.15)	3.47 (1.12)	3.47 (1.16)	−0.021	0.984	3.31 (1.13)	3.26 (1.15)	3.34 (1.12)	−0.815	0.415
Washing hands after touching potentially contaminated objects	4.51 (0.75)	4.52 (0.75)	4.51 (0.75)	0.080	0.937	4.48 (0.79)	4.51 (0.78)	4.47 (0.80)	0.500	0.617	4.54 (0.72)	4.52 (0.73)	4.55 (0.71)	−0.446	0.656
Wearing a mask, with or without symptoms	2.62 (1.55)	2.45 (1.51)	2.71 (1.57)	−2.622	0.009	2.79 (1.56)	2.58 (1.55)	2.89 (1.56)	−2.054	0.041	2.48 (1.53)	2.36 (1.47)	2.55 (1.57)	−1.541	0.124
Leaving at least a metre and a half away from others	4.43 (0.77)	4.45 (0.78)	4.41 (0.77)	0.777	0.437	4.41 (0.79)	4.45 (0.76)	4.39 (0.80)	0.759	0.448	4.44 (0.75)	4.46 (0.79)	4.44 (0.73)	0.315	0.753

Table 6
Prediction of psychological distress among non-health workers during the pandemic.

	Non-Health Workers (N = 1089)	Non-Health Workers Working Away From Home (N = 492)	Non-Health Workers Working From Home (N = 597)
	Odds Ratio (Confidence Interval at the 95% level)	Odds Ratio (Confidence Interval at the 95% level)	Odds Ratio (Confidence Interval at the 95% level)
Sex (ref. Male)	1.910** (1.456, 2.507)	1.787** (1.187, 2.690)	2.340** (1.606, 3.408)
Age (ref. Older than 43)	1.303* (1.002, 1.695)	NA	NA
Housing (ref. With outside space)	1.367* (1.001, 1.867)	NA	1,569* (1,034, 2.381)
You are:			
Public worker (ref. Self-employed)	NA	0.395** (0.199, 0.785)	NA
Private worker (ref. Self-employed)	NA	0.487** (0.256, 0.928)	NA
Perception of health during the last 14 days (ref. Optimal)	1.881* (1.154, 3.066)	NA	3.132** (1.523, 6.441)
Number of symptoms	1.195** (1.089, 1.311)	1.241** (1.085, 1.421)	1.179* (1.038, 1.338)
Contact with person or material (ref. None)	1.332* (1.021, 1.738)	NA	1.512* (1.051, 2.176)
Sensitivity (%)/Specificity (%)	25.5/88.4	21.2 / 90	37.9 / 87.3
Correctly classified percentage	66.5	67.5	69.20
R^2	0.113	0.082	0.163
Hosmer-Lemoshov test	$\chi^2 = 3.104$ ($p = 0.928$)	$\chi^2 = 5.919$ ($p = 0.656$)	$\chi^2 = 7.524$ ($p = 0.481$)
Omnibus test	$\chi^2 = 93.252$ ($p < 0.001$)	$\chi^2 = 28.749$ ($p < 0.001$)	$\chi^2 = 75.793$ ($p < 0.001$)

* $p < 0.05$.
** $p < 0.01$; NA: not applicable.

$$f(x) = -0.707 + 0.850\ Sex + 0.450\ Housing + 1.142\ Health + 0.164\ Symptoms + 0.413\ Contact$$

4. Discussion

The study has allowed us to know the degree of alteration of psychological health, in particular the level of distress, among non-health workers during the pandemic period by COVID-19 in Spain, differentiating between those workers of professional activities considered essential, carried out away from home, and those who were working from home.

The high percentage of psychological distress shown by the results of this study can be explained by the time of the pandemic in which data were collected. Thus, the field study was carried out at the beginning of the pandemic, and at a time when the deaths and contagion curve was rising. A higher level of psychological distress has been observed among women, as in most previous studies (Rodriguez-Rey et al., 2020; Wang et al., 2020), being so among health workers (Lopez-Atanes et al., 2020), patients, their families, and general society (Leung et al., 2020). In addition, women have been more willing to answer the questionnaire (66% of non-health workers who have answered it); perhaps the reason for this is their higher level of distress. This contrasts with the low number of women included in the sample of other COVID-19 research projects (Pinho-Gomes et al., 2020) or the few articles in which they appear as first author (Andersen et al., 2020).

The number of workers with distress among men who were working away from home (58.4%) is higher than the number of those who worked from home (46.9%), this difference is not appreciated in women. Likewise, for the latter, the percentage of distress is very similar, both in those who work away from home and for those who do so from home, with respect to what has been published for the general population (72%) or what is found in other studies on health professionals. However, this percentage is higher than in previous epidemics, where it was between 22.9% and 56.7% (Gómez-Salgado et al., 2020).

The aspects that seem to present more alterations are related to the restrictions arising from the state of health alert, which prevent normal activity and make it impossible to gather, also leading to loss of confidence. In subjects who work away from home, statistically significant differences are seen, as compared to those working from home, in relation to increased loss of sleep, unhappiness, and depression. Such alterations can be justified by their perception of increased risk of contagion to themselves or their families, and which may exceed the level of psychological distress caused by the permanent confinement of those who work from home (Brooks et al., 2020).

People over the age of 65 are considered a particularly health-risk collective with respect to SARS-Cov-2 virus contagion. The results of the study show how people under the age of 43 had a higher level of psychological distress than those over 43, so this risk factor has not been found to generate more distress, as in other published studies (Rodriguez-Rey et al., 2020; Wang et al., 2020).

Living in a house with exterior views has been identified as a protective factor for all non-health workers and for those who work from home. This fact can be understood by the decreased perception of confinement, also observed in previous studies (Brooks et al., 2020).

It is known that the perception of health, evaluated in the study with a question with five answer options, is a good predictor of morbidity (Eriksson et al., 2001). In the present study, this has proven to be a predictive variable for psychological distress among non-health workers globally, as well as for the sub-group working from home. On the contrary, there has been no statistically significant difference in workers who are active away from home, which can be explained by the heterogeneity of this group of workers.

The Spanish Government declared the Health Alert on 14 March 2020, opting for the centralised purchase of personal protective measures (masks, gloves, gowns, or facial protection), but did not guarantee their widespread use due to a lack of foresight and also a delay in the purchase of such material, as also happened in other countries. However, health centres were prioritised, unlike other workers of essential activities, who could also be exposed to contagion (Benavides, 2020). Among professional workers, the availability of protective measures has been a matter of concern associated with the fear of self-contagion and that of their families (Simms et al., 2020). Fear that, indeed, has proven to be real since, according to official data, one in four of the infected was a healthcare professional (Instituto Carlos III, 2020). On the other hand, the number of health workers infected was questioned, since for most of the pandemic there were no diagnostic tests available for healthcare workers. The number of contagions among other workers of essential activities should also be questioned, as diagnostic tests were prioritised for health workers. In the present study, only 1.1% (12 cases) responded to have been performed a diagnostic test, being this number lower among workers who worked away from home 0.8% (4 cases). Contact with infected people or contaminated material has been observed to be a predictor of psychological distress regarding the group of non-health workers, and more specifically, those working from home.

One of the consequences of the COVID-19 pandemic is the rapid exponential increase in telework, facilitated by new information technologies and with well-known associated negative effects on health (Aguilera et al., 2016; Messenger et al., 2017). However, telework also has positive economic, social, and environmental effects, as well as advantages for the entrepreneur and for the worker (Kim et al., 2015), an effect that, according to the predictions, has appeared on the scene to be established after companies have become aware of its impact on profits (Brooks et al., 2020).

Health professionals have been treated as heroes, applauded by much of the population every day at 8 p.m., but the population should consider the possible forgetfulness of another large group of essential workers, who much like health workers, have also been exposed to contagion, but with less social visibility. Thus, National law enforcement authorities, firefighters, security staff, military staff, formal dependent caregivers, and senior centres have also continued to develop their work in order to maintain and ensure public health. This lower social recognition could have conditioned their level of psychological distress, since they were also in close contact with infected people or suspicious of being infected. Similarly, these groups did not either suffer the negative effects of total confinement as they continued developing their work.

After a period of total confinement, with the exception of the activities considered essential, different phases of de-confinement have been initiated, in which the adaptation of the work centres to each of these phases requirements is mandatory. In each phase, which is reached unequally around the Spanish geography depending on the risk of contagion, limitations regarding mobility, gathering of people, and type of activities are progressively reduced. Known for its effects on mental health (WHO, 2020d), this inequality of geographic restrictions made the analysis of its health effects more complex. Also, another variable to include is the effect of the economic crisis associated with COVID-19 or insecurity for fear of loss of work, which also affected the increase of the psychological distress of the working population and is proven in the results of this study, as well as its effects on mental health (Karanikolos et al., 2016; Torá et al., 2015).

5. Conclusions

Psychological distress among non-health workers occurs in a higher percentage in women (71.6%) than in men (52.4%), having found in the latter differences between those working away from home (58.4%) and those working from home (46.9%).

The use of preventive measures was more greatly valued by workers who carried out their activity away from home than by those who teleworked. In addition, the most valued measures by all non-health workers were hand washing with soap and water, hand washing after contact with potentially contaminated objects, and social distancing measures.

Only specific diagnostic tests were performed for SARS-Cov-2 virus infection to 1.1% of active subjects, with the three most common symptoms being fever, dizziness, and breathing difficulties.

The level of psychological distress among non-health workers is predicted at 66.50% by the variables: being a woman, being 43 years old or younger, living in a house without outside space, having a poor perception of health during the last 14 days, the number of symptoms, and having been in contact with contaminated people or material. These results are obtained with a sensitivity of 25.5% and a specificity of 88.4%.

The level of psychological distress among non-health workers who work away from home is predicted at 67.5% by the variables: being female, being self-employed as compared to private or public company workers, and the number of symptoms. These results are obtained with a sensitivity of 21.2% and a specificity of 90.0%.

The level of psychological distress among non-health workers who work from home is predicted at 69.2% by the variables: being a woman, living in a house without outdoor space, having a poor perception of health during the last 14 days, the number of symptoms, and having had contact with contaminated people or material. These results are obtained with a sensitivity of 37.9% and a specificity of 87.3%.

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