The psychological impact of the Coronavirus emergency on physicians and nurses: an Italian observational study

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Abstract. *Background and aim of the work*: The Coronavirus has put a strain on the response capacity of health systems and there are various psychological effects on health workers. *Aim of the study*: To investigate the psychological impact of the coronavirus emergency on physicians and nurses. *Methods*: A study was conducted on a sample of nurses and physicians (n=770), who were asked to fill in a questionnaire investigating physical and psychological problems. It also included the IES (Impact Event Scale), STAI (State Trait Anxiety Inventory) scale and BDI (Beck Depression Inventory). *Results*: 87.7% of the sample was represented by nurses (n=675), 12.3% (n=95) by physicians. 52.3% (n=403). Among the psychological symptoms, stress (76.2%; n=587), anxiety (59.4%; n=457) and depression (11.8%) prevailed and only 3.9% of the healthcare personnel sought help from a psychologist. The total score of the IES-R scale was 3.47. A significant association emerged between exposure and the risk of contagion (p-value = 0.003), stress was more present among nurses than among physicians (77.5% vs. 67.4%; p = 0.003). Among physical symptoms, headache (52.2%; n=402) and pressure injuries (24.8% n= 191) prevailed. *Conclusions*: The results of the study show that mental health monitoring of health workers, who are at risk of developing major psychological disorders, is a priority.

Key words: psychological intervention, COVID-19, stress, anxiety, depression, psychological impact, Health workers, Mental health, Pandemic, Post-traumatic stress disorder.

Introduction

On 31 December 2019, Chinese health authorities notified an outbreak of pneumonia cases of unknown aetiology in Wuhan city (Hubei, China). On 9 January 2020, the China CDC (Centre for Disease Control and Prevention of China) identified a new Coronavirus (called 2019-nCoV) as the etiological cause of this disease. On 30 January 2020, the World Health Organization (WHO) designated the COVID-19 outbreak a "public health emergency of international concern" (1). From 23 March 2020, this new Coronavirus (Sars CoV-2) spread rapidly around the world, infecting more than 294,110 people in 187 countries and killing 12,944 people (2). Pandemic conditions require an immediate response in terms of medical assistance, with health and social care workers having to be at the forefront of the epidemic in the various

health service settings. It has affected and is drastically affecting all social and economic sectors of the world and, above all, has caused a number of adverse physical and psychological effects in the general population and among health workers (3). Several studies show that concern about high mortality rates and restrictions on people's lives have contributed to higher levels of anxiety, depression and sleep disorders in the general population. (4). Psychological disorders can also manifest themselves in non-functional attitudes, such as continuous medical consultations to obtain reassurance, distrust of public authorities, (5) or discrimination and stigma towards particular populations (6). In addition, many events such as the ever-increasing number of deaths and confirmed and suspected cases, the workload and physical fatigue, the exhaustion of protective equipment, the widespread media coverage, the lack of specific drugs, the choice among patients whom to treat/select for essential therapy due to the lack of medical supplies, the risk of infection, the feeling of not being supported are all factors that can contribute to the formation of important psychological symptoms (7). Health workers are therefore faced with critical situations that increase the risk of psychological distress. (8) and this could have serious repercussions not only on their quality of life but also on the quality of care provided to the patient. Studies conducted in Turkey, Iran and Spain confirm the prevalence of psychological symptoms among healthcare workers. A study conducted in China (9) showed that depression (50.4%), anxiety (44.6%), insomnia (34.0%) and stress (71.5%) were the most common psychological symptoms. Risk factors included being female, being a nurse, having a high risk of contracting COVID-19 or having at least one family member with COVID-19 (9) and social isolation are the most cited for the development of severe psychological symptoms (7).

The global spread of COVID-19 has therefore put the responsiveness of health systems to the test and numerous research studies are needed to assess the mental health of health workers, given their important role in responding to the situation. In addition, WHO also recommends that a large number of studies should be carried out in these circumstances (11), to provide guidelines that can help strengthen the response capacity of health systems. In Italy, there are still few studies that have analyzed the psychological impact of the pandemic, looking at levels of anxiety and depression among medical and nursing staff. Our study aims to provide empirical data on the psychological outcomes of the pandemic in health workers.

Main aim

To investigate the psychological impact of COVID-19 emergency on a population of physicians and nurses.

Secondary aim

To survey the lifestyle, physical and psychological health status and difficulties experienced by health workers during the period of the Coronavirus emergency, from April 2020 to June 2020.

Methods

Design

Observational, cross-sectional and multicentre study.

Samples

The study, conducted from April to June 2020, was carried out through the online dissemination of a questionnaire distributed by means of a link to all the presidents of the provincial orders of nursing and medical professions in the Country. All the Presidents of the Orders were sent an e-mail presenting the study and formally requesting their participation in the survey. Some of them did not reply to the e-mail. Others, however, did not wish to participate in the study. Only a few Presidents of the Orders agreed to participate in the survey, specifically eight provincial Orders of Nursing Professions (Lecco, Mantua, Genoa, Varese, Como, Lecce, Brindisi and Trapani) and one Order of Physicians and Dentists in the province of Lecce. After having obtained the access authorizations from the

respective Presidents to the mailing list, each medical and nursing professional belonging to the Order was sent an e-mail containing a brief presentation of the survey and the link to access the online questionnaire. Medical and nursing professionals, including nursing coordinators and nursing managers, working in both the public and private sectors were included in the study. They aged between 20 and 70 years and agreed to participate in the study by signing the informed consent. All medical and nursing professionals waiting for their first job were excluded. N=770 health professionals agreed to participate in the study.

Data collection

The survey instrument consists of 4 sections. The first section is aimed at collecting social-demographic data from participants, the second section was created by the study managers and explores the pandemic-induced lifestyle (12 items) and potential physical and psychological problems arising during the COVID-19 emergency (25 items). The third section includes the Impact Event Scale (IES) instrument (12), validated in the Italian language (13), widely used test to assess through 21 items the psychological impact and stress reactions caused by traumatic events. It consists of two subscales measuring the experiences of intrusion (items 1, 4, 5, 6, 10, 11, 14) and avoidance (items 2, 3, 7, 8, 9, 12, 13, 15). The items are rated on a 4-point Likert scale ranging from 0 ("not at all") to 4 ("extremely"). The fourth section includes the State Trait Anxiety Inventory scale consisting of 20 items (14) which assesses the level of Trait Anxiety, as a tendency to perceive stressful situations as dangerous and threatening. The items are rated on a 4-point scale (1 to 4) corresponding to "Not at all", "A little", "Somewhat" and "Very much". Higher scores are positively correlated with higher levels of anxiety. The fifth section is the Beck Depression Inventory (BDI) scale (15-16), consisting of 13 items that measure the presence and severity of depressive symptoms. The scale was constructed to measure the behavioral manifestations of depression, favoring the cognitive correlates, namely: sadness, pessimism, failure, dissatisfaction, guilt, self-esteem, suicide, loss of interest, indecision, appearance, work, fatigue, appetite. The test can be answered with a score from 0 to 3, while the total score ranges from 0 to 63. Scores from 0 to 13 indicate no depressive content; scores from 14 to 19 mild depression; scores from 20 to 28 moderate depression; scores from 29 to 63 severe depression.

All sections of the questionnaire were computerized using a pre-set form from the Google Drive platform.

Ethical considerations

Within the presentation of the questionnaire, the ethical characteristics of the study were stated. It was emphasized that participation was voluntary, and that the participant could refuse to take part in the protocol whenever he or she wished. Those interested in participating were given an informed consent form, which reminded them of the voluntary nature of participation, as well as the confidentiality and anonymous nature of the information. In addition, to ensure that the questionnaires were anonymous and to allow for identification of participants, a sequential identification (ID) number was given to each registered participant. Each questionnaire, therefore, had an ID number that corresponded to the database ID.

Data analysis

Descriptive analyses were conducted for all qualitative and quantitative variables using R-Studio software version 3.6.1. Continuous variables were summarized by means of mean and standard deviation (SD) and categorical variables by means of frequencies and percentages. After the descriptive analysis of all variables, the correlation between the S.T.A.I.- Y2 and B.D.I. scales and between these and the characteristics of the sample was analyzed. The ANOVA test was used to evaluate the difference between mean values on the IES; S.T.A.I.-Y2 and BDI scales. The association between occupational profile and levels of anxiety and stress, between work area and the impact scale, between exposure and the onset of symptoms was analyzed using the Anova tests. For all inferential analyses, statistically significant results below the 5% threshold are reported.

Results

Demographic characteristics

The sample that took part in the survey consisted of 770 health workers with a prevalence of the female gender (74.3%; n=572). Of the 770 participants in the study 675 were nurses (87.7%) and 95 were physicians (12.3%). 31% of the respondents had work experience of 1 to 5 years (n=239) and 49.2% had a Bachelor's degree as their highest level of education (n=379).

51.7% (n=391) live in the North, 16.4% (n=124) in the Centre and 31.9% (n=241) in the South. 78.6% of the sample (n=594) were not located in an area other than their own residence. 77.2% (n=584) worked closely with COVID-19 patients (not necessarily in a COVID-19 department), 33.3% (n=252) had to change department/work area due to the COVID-19 emergency. The area of work most represented in the study was the Critical Emergency Area (emergency department, 118, emergency medicine, intensive care, intensive short observation) with a percentage of 34.4% (n=265) (Tab. 1).

Table 1. Sample characteristics (n=770)	N. (%)
Gender	
Female	572 (74.3%)
Male	198 (25.7%)
Professional profile	
Nurse	675 (87.7%)
Physicians	95 (12.3%)
Years of work experience	
1-5	239 (31.0%)
6-10	102 (13.2%)
11-15	86 (11.2%)
16-20	67 (8.7%)
21-25	82 (10.6%)
26-30	83 (10.8%)
Over 30	111 (14.4%)
Qualification	
Regional diplom	167 (21.7%)
University diploma	62 (8.1%)
PhD	4 (0.5%)
Medical degree	86 (11.2%)
Master's degree	72 (9.4%)
Bachelor's degree	379 (49.2%)
In which geographical area do you live?	
North	391 (51.7%)
Centre	124 (16.4%)
South	241 (31.9%)
If you are in a different area from where you live, can you tell us why?	
Other	
Work	13 (1.7%)
I am not located in a different area	139 (18.4%)
Study	594 (78.6%)
Holiday	8 (1.1%)
	2 (0.3%)
Marital status	
Married	342 (45.2%)
Single	349 (46.2%)
Separated	60 (7.9%)
Widowed	5 (0.7%)

Children	
No	401 (53.0%)
Yes, adults	131 (17.3%)
Yes, minors	160 (21.2%)
Yes, both minors and adults	64 (8.5%)
Lives with	
Other	12 (1.6%)
Roommates	31 (13.2%)
Spouse	100 (13.2%)
Cohabitants	85 (11.2%)
Living alone	128 (16.9%)
Family with children	282 (37.3%)
Parents	111 (14.7%)
Relatives	7 (0.9%)
Have you worked closely with COVID-19 patients (not necessarily in a COVID-19 ward)?	
No	172 (22.8%)
Yes	584 (77.2%)
Did you have you have to change departments/work areas due to the COVID-19 emergency?	
No	504 (66.7%)
Yes	252 (33.3%)
Please indicate your current work area	
COVID-19 area	110 (14.3%)
COVID-19 post-acute area	48 (6.2%)
Surgical area	56 (7.3%)
Critical care emergency area	265 (34.4%)
Management/administrative area	16 (2.1%)
Maternal and child area	22 (2.9%)
Geriatric-rehabilitation medical area	77 (10.0%)
Multi-specialist medical area	79 (10.3%)
Territorial area	2 (0.3%)
Territorial area (Territorial medicine)	43 (5.6%)
Prevention and safety	25 (3.2%)
Services	23 (3.0%)
Which of the following categories do you fall into? Please choose one:	
Other	45 (5.8%)
Relative or close person of someone who tested positive	21 (2.7%)
Person who knows someone who tested positive	85 (11.0%)
Person who has had no direct contact with someone who is positive	99 (12.9%)
Person who is positive and in quarantine	52 (6.8%)
Person who is positive and hospitalised	8 (1.0%)
Rescuer or health worker who comes into contact with positive people or people who know someone who has tested positive	460 (59.7%)

Exposure, contagions and Personal Protective Equipment (PPE)

The study found that 17.5 % (n=135) of health-care workers developed symptoms indicative of Sars CoV-2. However, 13.9 % (n=107) did not stop working, 31.6 % (n=246) were not tested, 19.5 % (n=150) had difficulty undergoing the screening test, just over half of the sample 55.2 % (n=425) underestimated the public health effects of the pandemic during the initial days of the pandemic. 52.3% of the sample (n=403) did not feel that they had received good training from their health authority on the correct use of Personal Protective Equipment (PPE) against SARS CoV-2. 51.3% (n=395) stated that these devices were insufficient. 18.2% (n=140) stated that they had experienced at least

one moment when they had to choose among patients whom to treat/select for essential treatment due to lack of medical supplies. 15.5% of the sample chose whom to treat by age (n=119). Among the main concerns experienced during the pandemic, fear of making loved ones ill prevailed in 64.9% (n=500) (Tab. 2).

Analysis of physical and psychological health

In the second section the participant was asked to define their physical and psychological health status by means of a form with a detailed list (25 items) of potential physical and psychological problems that

Table 2. Exposure, infections and Personal Protective Equipment (PPE) (n=770)	N. (%)
How many people do you think you have been exposed to?	
None	69 (9.0%)
1-10	232 (30.1%)
11-100	309 (40.1%)
More than 100	160 (20.8%)
Have you ever had symptoms indicative of COVID-19 infection during this period?	
No	635 (82.5%)
Yes	135 (17.5%)
What did you do after developing symptoms indicative of COVID-19? **(Select all relevant answers)**	
I continued working	39 (5.1%)
Started medical treatment	5 (0.6%)
I physically left my family/ loved ones	29 (3.8%)
Went to the emergency room	12 (1.6%)
Went to the general practitioner	11 (1.4%)
Voluntarily self-quarantined	53 (6.9%)
I had no symptoms of COVID-19	621 (80.6%)
Have you been tested for COVID-19?	
No	277 (36.0%)
Yes	493 (64.0%)
Did you have difficulty being tested for COVID-19?	
No	374 (48.6%)
I have not been tested	246 (31.6%)
Yes	150 (19.5%)
How many times have you been tested for COVID-19?	
0	
1–2	271 (35.2%) 370
3–4	(48.1%) 109
5+	(14.2%) 20 (2.6%)
Do you think you understimated the effects of Pandemic on public health during the initial days of Pandemic?	
No	345 (44.8%)
Yes	425 (55.2%)
Do you think you have received good training about the correct use of Personal Protecion Equipment against COVID-19 from your Hospital	
No	403 (52.3%)
Yes	367 (47.7%)
Do you think that these protective devices were sufficient?	
No	395 (51.3%)
Yes	375 (48.7%)

Have you been provided with adequate Personal Protecion Equipment by your employer?	
No	301 (39.1%)
Yes	469 (60.9%)
Which of the following factors would influence/have influenced your decision to prioritise the treatment of certain groups of COVID-19 patients over others due to the shortage of medical supplies?	
Other	169 (21.9%)
Clinic	157 (20.4%)
Age	119 (15.5%)
Did not treat COVID-19 patients	244 (31.7%)
Chronic conditions	81 (10.5%)
What are the main concerns you feel during this period? (Choose all relevant answers)	
Other	42 (5.5%)
Falling ill	84 (10.9%)
Making your loved ones ill Not yet having adequate skills to take care of COVID-19 patients	500 (64.9%)
Not yet having adequate skills to take care of COVID-19 patients	33 (4.3%)
Not having adequate tools to take care of COVID-19 patients	72 (9.4%)
I have no concerns	39 (5.1%)
During this period of coronavirus emergency did you start taking antidepressant and/or neuroleptic drugs?	
No	713 (92.6%)
Si	57 (7.4%)
Who did you ask for help when you were most distressed?	
Friends	118 (15.3%)
Colleagues	158 (20.5%)
Family	241 (31.3%)
Psychologist/psychotherapist	30 (3.9%)
None	223 (29.0%)

arose during the COVID-19 emergency. Among the psychological symptoms stress (76.2%; n=587), anxiety (59.4%; n=457) and depression (11.8%; n=91) prevailed. Among the physical symptoms, headache/headache prevailed (52.2%; n=402); decubitus injuries caused by PPE (24.8% n= 191) and eating disorders (18.6%= 143) (Tab. 3).

Medians, means and SD for the sub-scales of the questionnaires

The total scores of the event impact scale, its subscales, trait anxiety and depression levels are shown in Table 4. Mean and SD were calculated for the total score and the subscales of the IES questionnaires associated with the work areas. Considering a score ranging from 0 ("not at all") to 4 ("extremely"), it can be seen that the territorial work area already showed high scores in the early stages of the pandemic (IES_R 6.99) followed by the COVID-19 area (IES_R 3.86), indicating the presence of PTSD. The results are reported in Table 5. Statistically significant results emerged between those who worked in close contact with COVID-19 patients and those who developed symptoms indicative of COVID-19 infection, where among other things the percentage of those who had COVID-19 symptoms doubled (19.5% compared to 9.9%) (Tab. 6). From the association between the professional profile and the levels of stress and levels of anxiety it emerges respectively that among nurse's stress is more present than among physicians (77.5% compared to 67.4%; p = 0.030) (Tab. 7); as well as for the various levels of anxiety, where however the chi-square test is not significant below the 5% threshold, but is significant at 10% (p = 0.083) (Tab. 8)

Table 3. Indication of a physical/psychological problem that has/has influenced work activities during the COVID-19 emergency period	N. (%)
Health problem No Yes	 628 (81.6%) 142 (18.4%)
Dizziness No Yes	 687 (89.2%) 83 (10.8%)
Allergies/Rhinitis/Sinusitis No Yes	 574 (74.5%) 196 (25.5%)
Dermatitis No Yes	 621 (80.6%) 149 (19.4%)
Depression No Yes	 679 (88.2%) 91 (11.8%)
Stress No Yes	 183 (23.8%) 587 (76.2%)
Anxiety No Yes	 313 (40.6%) 457 (59.4%)
Headache No Yes	 368 (47.8%) 402 (52.2%)
Bone pain No Yes	 583 (75.7%) 187 (24.3%)
Asthma **No** **Yes**	 724 (94.0%) 46 (6.0%)
Gastro-oesophageal reflux, gastritis No Yes	 555 (72.1%) 215 (27.9%)
Lumbago No Yes	 511 (66.4%) 259 (33.6%)
Arterial hypertension No Yes	 706 (91.7%) 64 (8.3%)
Menstrual pain No Yes	 563 (73.1%) 207 (8.3%)
Urination-retention disorders with recurrent cystitis No Yes	 696 (90.4%) 74 (9.6%)
Dyspnoea No Yes	 715 (92.9%) 55 (7.1%)

Excessive sweating with dehydration syndrome	
No	621 (80.6%)
Yes	149 (19.4%)
Heart palpitation	
No	583 (75.5%)
Yes	187 (24.3%)
Eating disorders	
No	627 (81.4%)
Yes	143 (18.6%)
Pressure injuries caused by Personal Protective Equipment (PPE)	
No	579 (75.2%)
Yes	191 (24.8%)
Fever	
No	706 (91.7%)
Yes	64 (8.3%)
Dry cough	
No	656 (85.2%)
Yes	114 (14.8%)
Conjunctivitis	
No	682 (88.6%)
Yes	88 (11%)
Loss of sense of taste (ageusia)	
No	699 (90.8%)
Yes	71 (9.2%)
Loss of sense of smell (anosmia)	
No	693 (90.0%)
Yes	77 (10.0%)
Levels of trait anxiety (STAY-Y2)	
Anxiety Absent	334 (43.4%)
Mild anxiety	263 (34.2%)
Moderate anxiety	131(17.0%)
Severe anxiety	42 (5.5%)

Tab. 4 Total scale scores

	Age	IES avoidance	IES Intrusiveness	IES Iperarousal	IES-R	STAY-Y2	BDI
N	756	770	770	770	770	770	770
Missing	14	0	0	0	0	0	0
Mean	2.44	1.09	1.16	1.23	3.47	43.1	5.72
Median	2.00	0.938	1.00	1.00	2.99	42.0	4.00
Minimum	1	0.00	0.00	0.00	0.00	20	0
Maximum	5	4.00	4.00	4.00	12.0	74	39

Discussion

This study aims to investigate the psycho-physical impact of the COVID-19 emergency on the quality of life, work-related stress and psycho-physical well-being of health workers. The sample that took part in the study by filling in the questionnaire consisted of 770 participants including nurses and physicians, 74.3% of whom were female, with work experience of 1 to 5 years and a three-year degree. The data from this study is in line with the study by Kang et al., (17), which shows both that the majority of professionals

Table 5. Mean scores and SD work area/scale of impact (IES)

Mean and SD Work area/IES scale							
Please indicate your current area of work	IES_Avoidance M (SD)		IES_ Intrusiveness M (SD)		IES_Iperarousal M (SD)		IES_R M(SD)
COVID-19 area	1.21	(0.9419)	1.32	(1.000)	1.33	(1.07)	3.86	(2.89)
Post-acute COVID-19 area	1.14	(0.930)	1.16	(0.910)	1.23	(0.911)	3.53	(2.63)
Surgical area	1.06	(0.940)	1.07	(1.11)	1.23	(1.05)	3.35	(2.97)
Critical care emergency area	1.13	(0.841)	1.26	(0.956)	1.29	(0.986)	3.69	(2.62)
Management/administrative area	1.12	(0.943)	0.781	(0.653)	0.875	(0.888)	2.77	(2.36)
Maternal and child area	0.966	(0.714)	0.955	(0.861)	1.12	(0.876)	3.04	(2.33)
Geriatric-rehabilitation medical area	0.953	(0.816)	1.06	(0.922)	1.23	(0.976)	3.25	(2.53)
Multi-specialist medical area	1.17	(0.888)	1.20	(0.970)	1.29	(1.03)	3.66	(2.76)
Territorial area	2.31	(0.972)	2.38	(0.884)	2.30	(0.990)	6.99	(2.85)
Prevention and safety	0.800	(0.784)	0.875	(0.834)	0.936	(0.896)	2.61	(2.28)
Services	0.688	(0585)	0.641	(0610)	0.550	(0.418)	1.88	(1.50)

Table 6. Association between exposure and infection levels

	Have you had any symptoms indicative of COVID-19 infection? χ^2= (p-value) =861(0.003)		
Have you worked closely with COVID-19 patients (not necessarily on a COVID-19 ward)	NO n. (%)	YES n. (%)	Total n. (%)
No	155 (90.1%)	17 (9.9	172 (100)
Yes	470 (80.5%)	114 (19.5)	584(100)
Total	625 (82.7)	131 (17.3)	756 (100)

Table 7. Association between professional profile and stress levels

	Stress Levels χ^2= (p-value) =470(0.003)		
Professional profile	NO n. (%)	YES n. (%)	Total n. (%)
Nurse	152 (22.5)	523 (77.5)	675 (100)
Physicians	31 (32.6)	64 (67.4)	95(100)
Total	183 (23.8)	587 (76.2)	770 (100)

Table 8. Association of trait anxiety levels and professional profile

Professional profile	Trait anxiety levels χ^2= (p-value) 6.69 (0.083)				
	Absent anxiety	Mild anxiety	Moderante anxiety	Severe anxiety	Total
Nurse	284	235	115	41	675
	42.1%	34.8%	17.0%	6.1%	100.0%
Physicians	50	28	16	1	95
	52.6%	29.5%	16.8%	1.1%	100.0%

were female and that their work experience ranged from 3 months to 17 years. More than half of the participants (51.7%) reside in Northern Italy, compared to smaller percentages representative of those residing in Southern and Central Italy. 78.6% are not in an area other than their residence. Moreover, 46.2% of the participants are single, 53.0% have no children and 37.3% live with a family with children. The area of work most represented in the study is the Critical Emergency Area (first aid, 118, emergency medicine, intensive care, intensive short observation) with a percentage of 34.4%. This figure is perfectly in line with what has been claimed in several studies conducted in various hospitals and critical care departments, including emergency departments (18–23). The study showed that 77.2% of health care workers had worked closely with COVID-19 patients but not necessarily in a COVID-19 ward and that 66.7% had not had to change wards/work areas due to the COVID-19 emergency. Again, this is in line with the findings of the studies by Hope et al. (24) and Seale et al. (25): Both agree that nurses are at the forefront of the health system's response to both epidemics and pandemics. In addition, nurses provide care directly to patients in close physical proximity, are often directly exposed to these viruses and are at high risk of developing disease. 59.7% of the sample were rescuers or health workers who come into contact with positive people or people who know someone who has tested positive. 40.1% believed they had been exposed to 11-100 people, 64.0% were tested for COVID-19, 48.1% were tested for COVID-19 1-2 times, 82% had no flu-like symptoms or symptoms indicative of COVID-19 infection and 13.9% did not stop working after developing these symptoms. After developing symptoms indicative of COVID-19 5.1% continued to work, 0.6% started medical treatment, 3.8% physically moved away from family/loved ones, 1.6% went to the emergency room, 1.4% went to the general practitioner, 6.9% voluntarily quarantined themselves, consistent with the study by Lam and Hung, 2013 (18). The results of our study show a significant association between work area and risk of Post-Traumatic Stress Disorder (PTSD), in particular the territorial areas (community medicine) and COVID-19 area are those with higher scores (IES_R 6.99 & IES_R 3.86). The greatest concern that health

workers feel in this period is that of making loved ones ill. This result is consistent with the findings of some studies (18,26–28), which found that the risk of being infected, transmission to family members, stigma about vulnerabilities in their work and restrictions on personal freedom were reported as key concerns (29). 55.2% thought they had underestimated the public health effects of the Pandemic during the initial days of the Pandemic, 52.3% thought they had not received good training from the health authority on the correct use of PPE against COVID-19. This contrasts with the study by Liu et al. (30) which showed that healthcare professionals received training in the correct use of PPE and in reducing their exposure to infection when caring for patients with COVID-19. Moreover, also Coia et al. (31) agreed that the selection and appropriate use of all PPE, including respiratory and face protection, should be supported by education and training of staff. 51.3% of the participants thought that PPE was not sufficient. This finding is fully in line with Kang et al. that participants were still concerned that PPE could not provide absolute protection (15). 92.6% of the participants had never taken antidepressant and/or neuroleptic drugs during this period. 31.3% of the participants asked their family for help in their moments of greatest distress, while only 3.9% of the health care personnel sought help from a psychologist/psychotherapist despite the presence of important psychological symptoms, such as anxiety (59.4%), stress (76.2%) and depression (11.8%) and despite the high risk of developing post-traumatic stress disorder. Preti et al. reported that among the psychopathological outcomes, anxiety and post-traumatic reactions were the most studied, and the results underlined the high prevalence of these areas of symptomatology in health professionals dealing with epidemic/pandemic outbreaks (8).

In addition, 34.2% presented mild anxiety, 17.0% presented moderate anxiety and 5.5% presented severe anxiety; this is in full agreement with several studies (15,28) which highlight the fact that nurses experienced greater anxiety about their health while caring for infected patients during a pandemic. (29). This does not deviate from what was previously stated by Pappa et al. (32) which showed that most experienced mild symptoms for both depression and anxiety, while

moderate and severe symptoms were less common among participants. The results of our study show that nurse practitioners experienced higher levels of stress in the early months of the pandemic than physicians (see Table VII). This underlines the need for early diagnosis and the importance of effectively collecting and treating psychological symptoms before they develop into more complex and lasting clinical pictures as shown by the results of a study conducted in Italy (33). Mental health monitoring and adequate psychological care and intervention must therefore be considered fundamental for the support of the whole community and, in particular, of the most fragile or exposed persons, such as health workers.

Conclusions

The results of our study must be considered taking into account some limitations concerning the sample size, which consisted in the majority of nurses compared to physicians; the lack of follow-up of the psychological consequences and the lack of investigation of the long-term effects of the participants in the study and, finally, the choice of electronic dissemination of the questionnaire that may have excluded professionals Physicians and nurses with a low computer background. However, this could be considered as a preliminary study that could contribute to the understanding of psychological consequences among healthcare professionals involved in the SARS-CoV-2 epidemic.

This study aims to investigate the psychological impact of the Coronavirus emergency on healthcare professionals, physicians and nurses. Furthermore, it aims to return a greater awareness not only of the emotional and psychological consequences but also of the difficulties experienced by healthcare professionals during this period, particularly from April 2020 to June 2020. Looking to the future, further studies could investigate the psychological impact not only on healthcare professionals but also on social and health workers (OSS), who were also on the frontline during the Pandemic. In addition, it would be useful to analyses the long-term effects of this emergency in order to suggest appropriate interventions at both local and national levels. It might also be useful to investigate the effectiveness of psychological support in such delicate situations.

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