

Original Article

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Author for correspondence:

Konstantinos N. Fountoulakis,
Email: kfount@med.auth.gr

Mental health and conspirasism in health care professionals during the spring 2020 COVID-19 lockdown in Greece

Konstantinos N. Fountoulakis¹, Maria K. Apostolidou², Marina B. Atsiova², Anna K. Filippidou², Angeliki K. Florou², Dimitra S. Gousiou², Aikaterini R. Katsara², Sofia N. Mantzari², Marina Padouva-Markoulaki², Evangelia I. Papatriantafyllou², Panagiota I. Sacharidi², Aikaterini I. Tonia², Eleni G. Tsagalidou², Vasiliki P. Zymara², Panagiotis E. Prezerakos³, Sotirios A. Koupidis⁴, Nikolaos K. Fountoulakis⁵ , Anastasia Konsta¹, Eva Maria Tsapakis⁶, Pavlos N. Theodorakis⁷ and Elias Mossialos⁸

¹Department of Psychiatry, School of Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece; ²PMS “Clinical Mental Health” Faculty of Medicine, School of Health sciences, Aristotle University of Thessaloniki, Thessaloniki, Greece; ³Department of Nursing, University of Peloponnese, Laboratory of Integrated Health Care, Tripoli, Greece; ⁴Occupational and Environmental Health Sector, Public Health Policy Department, School of Public Health, University of West Attica, Athens, Greece; ⁵Faculty of Medicine, Medical University of Sofia, Sofia, Bulgaria; ⁶Agios Charalampos Mental Health Clinic, Heraklion Crete, Greece; ⁷Health Policy, WHO Regional Office for Europe, Athens, Greece and ⁸Department of Health Policy, London School of Economics and Political Science (LSE), London, UK

Abstract

Introduction: The aim of the study was to investigate mental health and conspiracy theory beliefs concerning COVID-19 among health care professionals (HCPs). **Material and methods:** During lockdown, an online questionnaire gathered data from 507 HCPs (432 females aged 33.86 ± 8.63 and 75 males aged 39.09 ± 9.54). **Statistical analysis:** A post-stratification method to transform the study sample was used; descriptive statistics were calculated. **Results:** Anxiety and probable depression were increased 1.5–2-fold and were higher in females and nurses. Previous history of depression was the main risk factor. The rates of believing in conspiracy theories concerning the COVID-19 were alarming with the majority of individuals (especially females) following some theory to at least some extent. **Conclusions:** The current paper reports high rates of depression, distress and suicidal thoughts in the HCPs during the lockdown, with a high prevalence of beliefs in conspiracy theories. Female gender and previous history of depression acted as risk factors, while the belief in conspiracy theories might act as a protective factor. The results should be considered with caution due to the nature of the data (online survey on a self-selected but stratified sample).

Significant outcomes

- The strengths of the current paper include the large number of persons who filled the questionnaire and the large bulk of information obtained, as well as the detailed way of post-stratification of the study sample.

Limitations

- The major limitation was that the data were obtained anonymously online through self-selection of the responders.
- Additionally, the assessment included only the cross-sectional application of self-report scales, although the advanced algorithm used for the diagnosis of probable depression corrected the problem to a certain degree. However, what is included under the umbrella of ‘probable depression’ in the stressful times of the pandemic remains a matter of debate.
- Also, the lack of baseline data concerning the mental health of a similar study sample before the pandemic is also a problem.



Introduction

So far, it has been solidly proven that the COVID-19 outbreak triggered feelings of fear, worry and stress, as responses to an extreme threat for the community and the individual

(Fountoulakis *et al.*, 2021). Clinical depression, sleep disorders and post-traumatic stress disorder (PTSD) were also reported both in the general population as well as in health care professionals (HCP). Apart from the effect of the virus itself, in addition, changes in social behaviour, as well as in working conditions, daily habits and routine, are expected to impose further stress, especially with the expectation of an upcoming economic crisis and possible unemployment (Saladino *et al.*, 2020). The term 'infodemic' was introduced for the first time to denote the overwhelming flow of information of unknown reliability and validity (Asmundson and Taylor, 2021).

Concerning the general population, a recent meta-analysis reported the presence of anxiety in 25% and depression in 28% of individuals (Ren *et al.*, 2020) while a second one reported that 29.6% of people experienced stress, 31.9% anxiety and 33.7% depression (Salari *et al.*, 2020). Meta-analytical studies with data on HCW reported that anxiety is present in 23-38%, depression in 22-32% and insomnia in 38.9% (Luo *et al.*, 2020, Pappa *et al.*, 2020). The prevalence of general psychiatric symptoms during outbreaks ranges between 17.3 and 75.3% (Preti *et al.*, 2020).

In Greece, where the spring 2020 lockdown was extremely successful in terms of containing the outbreak, worries concerning the effects on mental health were also predominant. The ultra-fast application of measures was probably the reason for this outstanding success (Fountoulakis *et al.*, 2020b); however, an impact on the mental health status of the general population and of university students has already been documented (Patsali *et al.*, 2020, Kaparounaki *et al.*, 2020, Fountoulakis *et al.*, 2020a, Skapinakis *et al.*, 2020, Parlapani *et al.*, 2020). There were also some data on the impact on HCP (Blekas *et al.*, 2020)

The aim of the study was to investigate the rate of anxiety, dysphoria, probable depression and suicidality in HCP in Greece, during the period of the spring 2020 lockdown. The secondary aim included the investigation of the spreading of conspiracy theory beliefs concerning the COVID-19 outbreak among HCP. Conspiracy theories concerning the origin of the outbreak or even their existence per se were widespread during the early phase of the pandemic, while later they were replaced by theories pertaining to vaccines. All these theories had a profound negative effect on health behaviours and reduced the efficacy of measures against COVID-19.

Material and methods

Method

The full protocol used has been published before and is available as a webappendix; each question was given an ID code; throughout the results, these ID codes were used for increased accuracy (Fountoulakis *et al.*, 2020a). The protocol gathered demographic data and also data pertaining to general health, previous psychiatric history, current symptoms of anxiety (STAI-Y1 state) (Fountoulakis *et al.*, 2006), depression (CES-D) (Fountoulakis *et al.*, 2001) and suicidality (RASS), (Fountoulakis *et al.*, 2012) as well as a detailed protocol to investigate changes because of the lockdown in sleep, sex, family relationships, finance, eating and exercising and religion/spirituality. Additionally, the beliefs concerning the COVID-19 outbreak, including the measures taken and conspiracy theories, were investigated.

According to a previously developed method (Fountoulakis *et al.*, 2001, Fountoulakis *et al.*, 2012, Fountoulakis *et al.*, 2021), the cut-off score 23/24 for the CES-D and a derived algorithm were

used to identify cases of probable depression, as those identified by both methods. This algorithm utilised the weighted scores of selected CES-D items in order to arrive at the diagnosis of probable depression and has already been validated. Cases identified by only either method were considered cases of distress (false positive cases in terms of depression), while cases identified by both the cut-off and the algorithm were considered as probable depression.

The data were collected online and anonymously from April 11 to May 1, 2020, during the period of the full implementation of lockdown in the country. Announcements and advertisements were done on the social media and through news sites, but no other organised effort had been undertaken.

Approval was given by the Ethics Committee of the Faculty of Medicine, Aristotle University of Thessaloniki, Greece.

Participants were informed of the existence of the study and the questionnaire through announcements on the social media and news sites. The first page included a declaration of consent which everybody accepted by continuing with the participation.

Material

The survey collected data from 3399 persons from the general population, of which 512 were HCP. They included 432 females (84.37%; aged 33.86 ± 8.63) and 75 males (14.64%; aged 39.09 ± 9.54), while 5 declared 'other' (0.97%; aged 29.00 ± 5.29). The analysis included only the 507 individuals which were self-identified as either males or females because of the very small number of the third group. The results concerning the general population have been published and are available elsewhere (Fountoulakis *et al.*, 2020a).

The study sample was self-selected, and there was no effort to adjust it to the characteristics of the respected health professionals population of the country since such data were not available. This constitutes one of the limitations of the current study.

Statistical analysis

The study population was self-selected. A method of simplified post-stratification was used (Sarndal, 1992, Holt and Smith, 1979, Little, 1993, Lavrakas, 2008, Keeble *et al.*, 2015) in order to create a standardised study sample with characteristics as close as possible to those of the Greek general population. The detailed method can be found in the webappendix of the publication concerning the general population (Fountoulakis *et al.*, 2020a).

Chi-square tests were used for the comparison of frequencies when categorical variables were present, and for the post hoc analysis of the results, a Bonferroni-corrected method of pair-wise comparisons was utilised (MacDonald and Gardner, 2016).

Multiple forward stepwise linear regression analysis was performed with Scheffé as post hoc test to investigate which variables could contribute to the development of others.

Factorial analysis of variance (ANOVA) was used to test for the main effect as well as the interaction among categorical variables.

Results

Demographics (Table 1)

The demographics of the stratified study sample are shown in Table 1. They are clearly different from those of the raw sample, are close to the general population in terms of gender and age. There was a difference in age concerning gender and specific profession as well as in their interaction ($df = 4$, $MS = 5120$,

Table 1. Demographics of the stratified study sample. Most groups (gender-by-profession) differ from most others in terms of age (Factorial ANOVA; $df = 4$, $MS = 5120$, $F = 55.3$, $p < 0.001$)

Gender-by-occupational group	Age		% of total sample
	Mean	SD	
<i>Females</i>			
Doctor	39.73	10.13	4.20
Nurse	42.07	10.46	12.10
Other clinical health professional	37.11	9.53	31.33
Administration staff	46.21	10.41	3.74
Other staff	39.89	10.77	3.60
Total	39.20	10.29	54.98
<i>Males</i>			
Doctor	49.38	10.11	13.97
Nurse	30.67	4.68	2.54
Other clinical health professional	41.81	8.86	20.89
Administration staff	57.61	9.55	4.66
Other staff	42.29	9.84	2.96
Total	45.19	11.14	45.02

$F = 55.3$, $p < 0.001$). The study sample was quite heterogeneous with most groups differing from most others in terms of age. Although official data are not available, these ages reflect the age of these professional groups in the country, at least concerning doctors and nurses.

Probable depression (Table 2)

Probable depression was present in 10.78% of females and 5.64% of males. In both cases, the results are approximately double of what is expected from the general population. For comparison, in the raw dataset, the overall rate of probable depression was 13.4% and was identical in the two sexes. This is three to four times higher than expected from the general population.

In both sexes, the high rates of depression are driven by other 'clinical health professionals' and female nurses and female other staff while both male and female doctors manifest not higher than expected rates of probable depression. One-fifth of females belonging to 'other staff' were classified as suffering from probable depression, which is approximately four times higher than expected.

Chi-square test revealed a significant gender-by-occupation interaction (chi-square = 18.907, $df = 4$, $p < 0.001$).

The depressive affect was worse in 40.37% of females (same in 53.98%) and in 32.61% of males (same in 63.01%) in comparison to the pre-COVID-19 period (chi-square = 1.299, $df = 1$, $p = 0.254$).

Dysphoria (Table 2)

Non-clinical dysphoria was found in 8.15% of females and 7.52% of males, which is very close to what is expected from the general population under normal conditions (Fountoulakis *et al.*, 2001, Fountoulakis *et al.*, 2012). No difference was found by chi-square test.

Anxiety (Table 2)

STAI scores were higher two-fold for females and 1.5-fold for males in comparison to what is expected from the general population and at the levels expected in patients with depression (Fountoulakis *et al.*, 2006). Sub-analysis revealed that anxiety scores were elevated in all subgroups, including non-depressed individuals (41.09 ± 11.37), and were even higher for dysphoric individuals (56.09 ± 8.03), and depressed patients (62.77 ± 13.01). There was a difference in STAI score concerning gender and specific profession as well as in their interaction ($df = 4$, $MS = 1696$, $F = 11.14$, $p < 0.001$). Scheffe post hoc test revealed that the difference was due to the significantly lower scores male doctors and administration staff had in comparison to the rest.

In total, individuals with scores above two standard deviations from the expected mean (>67 ; severe anxiety) accounted for 4.57%, while those with scores one standard deviation above the mean (>36 ; at least moderate anxiety) accounted for 69.37%.

Increased anxiety due to the lockdown was reported by 48.20% of females (same in 45.57%) and by 38.25% of males (same in 59.25%) in comparison to the pre-COVID-19 period (chi-square = 2.017, $df = 1$, $p = 0.1555$).

Sleep problems (Table 3)

A recent worsening of the quality of sleep was reported by 39.86% of females and 25.08% of males while an improvement was reported by 16.5% and 15.99% respectively (worsening vs. the rest, chi-square = 4.981, $df = 1$, $p = 0.0256$). There was a high variability in terms of gender-by-professional identity subgrouping. On the contrary, there was a homogenous shift of the sleep timetable, with all subgroups reporting staying awake very late in the night and sleep much more during the day, but use of sleeping pills was negligible. Nightmares, recently, were reported by 26.89% of females and 17.55% of males, but with male nurses reporting the highest percentage (50%) (chi-square = 9.421, $df = 1$, $p = 0.051$).

Suicidality (Table 4)

A similar percentage in both sexes reported no change in suicidal thoughts (85%) but approximately in 10% these thoughts increased. In the total stratified sample, 7.26% (5% of females and 10.03% of males) answered that they think at least sometimes of killing themselves, and this is two-fold higher than what is expected. The highest percentage was found in male administrative staff (36.36%) and the lowest in male nurses (0%) and male doctors (2.02%).

The effect of history of mental disorder (Tables 5 and 6)

The history of any mental disorder was driven exclusively by the history of unipolar depression, which was present in 32.80% of females and 21.32% of males, with doctors manifesting again the lower rates (Table 5). While in those without history of depression, the rates of the presence of probable depression were what expected cross-sectionally from the general population (5.35% for females and 2.79% for males); the respected rates for those with a history of depression were four to six times higher (21.92% for females and 16.18% for males), and the difference was significant (females: chi-square = 11.658, $df = 1$, $p = 0.0006$; males: chi-square = 10.442, $df = 1$, $p = 0.0012$).

The presence of dysphoria was not affected by the history of depression in females but in males with such a history, dysphoria

Table 2. Rates of dysphoria, clinical depression and anxiety in the standardised population as well as rates of change in comparison to the pre-COVID-19 period

	Normal (%)	Dysphoria (%)	Probable depression (%)	Anxiety (STAI)		Change in depression in comparison to before COVID-19					Change in anxiety in comparison to before COVID-19				
				Mean	SD	Much worse	Worse	Same	Better	Much better	Much worse	Worse	Same	Better	Much better
<i>Females</i>															
Doctor	80.67	14.29	5.04	44.69	12.44	10.08	35.29	52.10	2.52	0.00	18.49	31.93	49.58	0.00	0.00
Nurse	84.55	4.37	11.08	46.52	12.05	7.00	22.74	65.01	1.75	3.50	5.25	35.28	51.60	3.50	4.37
Other clinical health professional	80.41	8.22	11.37	47.01	12.76	4.39	40.32	48.87	5.18	1.24	8.67	46.51	38.06	5.29	1.46
Administration staff	80.19	16.98	2.83	44.27	10.28	5.66	31.13	63.21	0.00	0.00	5.66	5.66	85.85	2.83	0.00
Other staff	76.47	3.92	19.61	42.34	14.99	6.86	29.41	53.92	9.80	0.00	7.84	41.18	44.12	6.86	0.00
Total	81.07	8.15	10.78	46.23	12.64	5.65	34.72	53.98	4.17	1.48	8.41	39.79	45.57	4.43	1.80
<i>Males</i>															
Doctor	94.95	3.03	2.02	35.45	7.81	4.04	24.24	70.71	1.01	0.00	4.04	34.34	57.58	3.03	1.01
Nurse	100.00	0.00	0.00	42.17	10.57	0.00	33.33	33.33	16.67	16.67	0.00	33.33	66.67	0.00	0.00
Other clinical health professional	75.68	14.19	10.14	45.95	14.01	5.41	28.38	61.49	4.73	0.00	11.49	25.68	60.14	2.70	0.00
Administration staff	96.97	0.00	3.03	37.76	14.88	3.03	48.48	48.48	0.00	0.00	3.03	48.48	48.48	0.00	0.00
Other staff	100.00	0.00	0.00	44.14	9.10	0.00	14.29	85.71	0.00	0.00	14.29	14.29	71.43	0.00	0.00
Total	86.83	7.52	5.64	41.51	12.91	4.08	28.53	63.01	3.45	0.94	7.84	30.41	59.25	2.19	0.31

Table 3. Changes in parameters of sleep in comparison to the pre-COVID-19 period

	Much worse	A little bit worse	The same	A little better	Much better
The quality of my sleep has changed recently. It is:					
<i>Females</i>					
Doctor	7.56	28.57	37.82	21.01	5.04
Nurse	2.33	27.70	61.22	5.25	3.50
Other clinical health professional	12.50	34.68	32.43	12.95	7.43
Administration staff	2.83	11.32	83.02	0.00	2.83
Other staff	13.73	26.47	48.04	5.88	5.88
Total	9.31	30.55	43.65	10.53	5.97
<i>Males</i>					
Doctor	0.00	6.06	69.70	24.24	0.00
Nurse	16.67	33.33	50.00	0.00	0.00
Other clinical health professional	9.46	22.97	54.05	11.49	2.03
Administration staff	6.06	9.09	72.73	12.12	0.00
Other staff	57.14	0.00	28.57	14.29	0.00
Total	9.72	15.36	58.93	15.05	0.94
	Almost never	Rarely	Sometimes	Often	Almost always
I tend to stay up late and sleep for many hours during the day.					
<i>Females</i>					
Doctor	40.34	34.45	15.97	6.72	2.52
Nurse	44.90	20.99	26.53	5.54	2.04
Other clinical health professional	42.45	15.77	16.67	17.91	7.21
Administration staff	57.55	28.30	8.49	5.66	0.00
Other staff	44.12	3.92	32.35	7.84	11.76
Total	43.97	18.42	19.26	12.84	5.52
<i>Males</i>					
Doctor	59.60	18.18	9.09	12.12	1.01
Nurse	50.00	50.00	0.00	0.00	0.00
Other clinical health professional	35.81	20.95	30.41	3.38	9.46
Administration staff	0.00	36.36	60.61	3.03	0.00
Other staff	14.29	14.29	57.14	0.00	14.29
Total	38.87	22.88	26.96	5.64	5.64
During lockdown, I take sleeping pills to help me sleep at night.					
<i>Females</i>					
Doctor	97.48	2.52	0.00	0.00	0.00
Nurse	90.38	6.12	3.50	0.00	0.00
Other clinical health professional	95.16	2.14	1.91	0.56	0.23
Administration staff	100.00	0.00	0.00	0.00	0.00
Other staff	93.14	0.00	2.94	0.00	3.92
Total	94.48	2.76	2.05	0.32	0.39
<i>Males</i>					
Doctor	98.99	0.00	0.00	0.00	1.01
Nurse	100.00	0.00	0.00	0.00	0.00
Other clinical health professional	93.24	4.73	0.00	0.68	1.35

(Continued)

Table 3. (Continued)

	Almost never	Rarely	Sometimes	Often	Almost always
Administration staff	100.00	0.00	0.00	0.00	0.00
Other staff	100.00	0.00	0.00	0.00	0.00
Total	96.55	2.19	0.00	0.31	0.94
I am having dreams in which I feel trapped, over the last 3 weeks.					
<i>Females</i>					
Doctor	87.39	11.76	0.00	0.84	0.00
Nurse	76.68	10.20	10.50	2.62	0.00
Other clinical health professional	68.58	16.33	10.36	4.05	0.68
Administration staff	77.36	14.15	5.66	0.00	2.83
Other staff	79.41	3.92	4.90	7.84	3.92
Total	73.11	13.67	8.92	3.47	0.83
<i>Males</i>					
Doctor	91.92	3.03	2.02	3.03	0.00
Nurse	50.00	16.67	16.67	16.67	0.00
Other clinical health professional	75.00	13.51	4.05	5.41	2.03
Administration staff	93.94	0.00	3.03	3.03	0.00
Other staff	100.00	0.00	0.00	0.00	0.00
Total	82.45	8.15	3.76	4.70	0.94

was 3.69 times higher. Interestingly, while in persons without a history of depression, the sum of the rates of dysphoria and depression is approximately double in females in comparison to males (13.09% vs. 7.57%), in persons with a history of depression this sum is similar (30.92% vs. 33.83%) (Table 5), suggesting that in females the effect of history is stronger and they progress easier to clinical depression, although chi-square was not significant.

Overall, the rates of history of suicidal attempts are similar to what would be expected from the general population (Fountoulakis *et al.*, 2012) and this adds to the validity of the stratification process. Males reported almost half the rates of history of suicidal attempts in comparison to females (1.88% vs. 3.08%; Table 6) but although they manifested lower rates of depression, their suicidal tendencies were higher than those of females. While for both sexes with a previous history of depression the increase in suicidal thoughts was similar (approximately 15%), in those without history of depression, the rates were double in males (12.75% vs. 6.30%; Table 6). The number of patients with history of suicidal attempts was too small to do a similar analysis with grouping subjects according to suicidal history.

The RASS Suicidal intention score was higher in the group with previous history of depression and while in the subgroup without depression the RASS scores were similar between the two genders, in the group with a history of depression the total RASS score was double in males. Additionally, the RASS subscale scores were similar to the scores expected in the general population (Fountoulakis *et al.*, 2012) except from those of males with a positive history of depression (Table 4). Factorial ANOVA suggested a significant difference among the groups defined by gender-by-profession concerning RASS Intention and Life subscales. The Scheffe post hoc test suggested that these differences were due to the high scores of the male administration and other staff ($p < 0.001$).

Believing in conspiracy theories (Table 7)

The rates of the believing in conspiracy theories concerning the COVID-19 epidemic are at least partially impressive and alarming. For example, only one-third of HCP definitely rejects the belief that COVID-19 is deliberately exaggerated via terror-inducing propaganda, and this includes an astonishingly low rate close to 50% for doctors. Only 30.56% of females and 47.01% of males reject the idea that the COVID-19 was created in a laboratory and deliberately released as a biochemical weapon to exterminate human population. To at least some extent, this idea is followed by more than 60% of female and almost 30% of male doctors. The 5G conspiracy theory is to some extent accepted by approximately 23% of females (including 5.5% of female doctors) and 6.5% of males (including one-third of male nurses). Conceptualising the outbreak as a form of direct and real divine punishment was embraced by 25% of females and almost 15% of males, and these same rates hold for doctors.

Discussion

During lockdown, among health professionals, probable depression was present in 10.78% of females and 5.64% of males (increased 2-fold) and was higher in females and nurses but levels of dysphoria were not increased. Depressed affect worsened in 40.37% of females and in 32.61% of males in comparison to the pre-COVID-19 period. Anxiety increased two-fold for females and 1.5-fold in males and worsening of the quality of sleep in 39.86% of females and 25.08% of males. Nightmares, recently, were reported by 26.89% of females and 17.55% of males, but with male nurses reporting the highest percentage (50%). Previous history of depression was the main risk factor behind high rates of depression especially in females and the 2-fold increase in suicidal thoughts

Table 4. Changes in suicidal thoughts and in relationship to a previous history of depression

How much has your tendency to think about death and/or suicide changed, compared to before the outbreak of COVID-19?						No history of depression								Depression history							
						RASS intention scale		RASS life scale		RASS history scale		RASS total suicide score		RASS intention scale		RASS life scale		RASS history scale		RASS total suicide score	
						Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Females</i>																					
Doctor	2.52	0.00	83.19	14.29	0.00	7.25	42.55	65.93	51.11	47.09	47.13	120.27	113.29	23.75	61.32	92.68	57.74	63.04	34.11	179.46	95.14
Nurse	12.54	0.87	78.72	7.00	0.87	37.06	97.04	59.26	63.14	30.22	37.42	126.53	153.19	11.42	29.09	119.37	65.49	64.07	39.11	194.85	101.43
Other clinical health professional	3.83	1.13	85.25	9.57	0.23	23.75	84.36	97.94	86.19	33.82	41.80	155.51	161.39	46.08	87.41	134.81	96.15	43.11	59.46	224.00	171.43
Administration staff	0.00	0.00	94.34	2.83	2.83	16.52	53.93	84.57	89.95	12.61	32.84	113.70	145.30	7.70	26.29	117.16	63.46	41.08	49.34	165.95	64.42
Other staff	2.94	0.98	86.27	5.88	3.92	12.41	40.89	71.36	89.99	39.14	59.91	122.90	163.61	154.76	190.75	219.05	130.50	115.2	122.77	489.05	398.73
Total	5.33	0.90	84.34	8.66	0.77	23.62	80.45	84.50	81.67	33.27	43.12	141.38	155.90	37.46	84.27	130.64	89.23	52.51	59.14	220.61	172.79
<i>Males</i>																					
Doctor	3.03	1.01	94.95	1.01	0.00	23.28	72.77	25.98	68.65	24.14	38.68	73.39	153.14	48.75	49.30	21.25	21.55	15.00	26.26	85.00	48.86
Nurse	0.00	0.00	100.00	0.00	0.00	0.00	0.00	95.83	78.40	50.00	37.68	145.83	58.10								
Other clinical health professional	0.00	0.00	82.43	12.84	4.73	25.32	95.80	88.07	81.90	21.79	55.52	135.18	207.19	145.77	189.46	176.92	125.01	57.56	57.61	380.26	319.67
Administration staff	0.00	0.00	63.64	36.36	0.00	251.5	158.1	181.32	61.25	80.00	38.99	512.89	148.92	6.07	22.09	30.00	76.56	28.21	69.74	64.29	162.97
Other staff	0.00	0.00	85.71	14.29	0.00	15.83	35.65	125.00	78.81	0.00	0.00	140.83	110.18	290.00	0.00	85.00	0.00	90.00	0.00	465.00	0.00
Total	0.94	0.31	85.58	10.97	2.19	39.24	107.3	76.81	87.56	27.47	48.85	143.53	203.87	106.25	161.57	115.15	124.52	45.44	58.33	266.84	296.19

Table 5. History of depression and rates of dysphoria and probable depression in individuals with and without history of depression

	History of depression (%)	No history of depression (%)			History of depression (%)			Ratio (history: no history)	
		Normal	dysphoria	Probable depression	Normal	dysphoria	Probable depression	dysphoria	Probable depression
<i>Females</i>									
Doctor	23.53	83.52	13.19	3.30	71.43	17.86	10.71		
Nurse	39.07	91.39	1.44	7.18	73.88	8.96	17.16		
Other clinical health professional	32.77	88.11	7.37	4.52	64.60	9.97	25.43		
Administration staff	34.91	69.57	26.09	4.35	100.00	0.00	0.00		
Other staff	20.59	85.19	4.94	9.88	42.86	0.00	57.14		
Total	32.80	86.91	7.74	5.35	69.08	9.00	21.92	1.16	4.10
<i>Males</i>									
Doctor	12.12	97.70	0.00	2.30	75.00	25.00	0.00		
Nurse	0.00	100.00	0.00	0.00	0.00	0.00	0.00		
Other clinical health professional	26.35	84.40	11.01	4.59	51.28	23.08	25.64		
Administration staff	42.42	100.00	0.00	0.00	92.86	0.00	7.14		
Other staff	14.29	100.00	0.00	0.00	100.00	0.00	0.00		
Total	21.32	92.43	4.78	2.79	66.18	17.65	16.18	3.69	5.80

especially in males. The rates of the believing in conspiracy theories concerning the COVID-19 epidemic were alarming with the majority of individuals following some theory to at least some extent and with females having higher acceptance rates. Even among doctors, these beliefs were highly prevalent, and this concerned even the most extreme of them.

While the results concerning probable depression are more or less similar to those previously reported concerning the general population (Fountoulakis *et al.*, 2020a), there is a significant difference: in HCP, the history of depression seems to be the decisive factor; individuals without such a history manifest the rates expected from the general population during normal periods (which is still high because 'general population' includes also persons with positive history of depression), while those with such a history had at least four to six times higher rates. These results suggest a probable increase in first episodes of depression but also an explosive increase in relapses during lockdown. It is unknown which percentage of those persons with a previous history manifested a relapse and which had an ongoing episode with onset before the outbreak.

Concerning the increase of suicidal ideation in HCP, this seems to be higher concerning the reported from the general population (Fountoulakis *et al.*, 2020a).

The results of the current study should be considered by having in mind that they were gathered during a period of strict lockdown. This kind of lockdowns have a complex but overall negative impact on the mental status of the population, and it is believed they cause distress and depression (Foa *et al.* 2020, Recchi *et al.*, 2020, Di Blasi *et al.*, 2021, Rossi *et al.*, 2021).

The literature is already rich concerning the mental health of HCPs although the bulk of data come from a limited number of countries, and generalisability is questionable. Most of the data were gathered through online questionnaires and their study samples are not standardised. However, concerning doctors, most of the data suggest high rates of up to 60% of psychopathology

(Maciaszek *et al.*, 2020) and especially of anxiety (Al Mahyijari *et al.*, 2020, Amin *et al.*, 2020) and depression (Amin *et al.*, 2020). Rates vary from 32.9% for stress and anxiety (Chatterjee *et al.*, 2020) 34.9% for depression (Chatterjee *et al.*, 2020) and 45% of symptoms of stress (Das *et al.*, 2020) and 63.5% of symptoms of depression (Das *et al.*, 2020). Female gender was related to higher rates of anxiety and depression (Hacimusalar *et al.*, 2020, Maciaszek *et al.*, 2020).

Also in nurses, there are reports of high anxiety (Al Mahyijari *et al.*, 2020), higher than those reported in other health professionals (Wang *et al.*, 2020, Ning *et al.*, 2020, Lai *et al.*, 2020, Jo *et al.*, 2020, Cabarkapa *et al.*, 2020, Azoulay *et al.*, 2020), and this is also true concerning depression (Hacimusalar *et al.*, 2020) and PTSD (Wang *et al.*, 2020, Song *et al.*, 2020). Rates of anxiety are reported to be up to 50.4% (Azoulay *et al.*, 2020), depression being as high as 30.4–43.61% (An *et al.*, 2020, Azoulay *et al.*, 2020) and trauma-related disorders up to 32–39.3% (Azoulay *et al.*, 2020, Chen *et al.*, 2020). In terms of symptomatology, it has been reported that 8.1–40% had anxiety, 9.4–46% had depressive symptoms, and 42.7% had somatic symptom, while 6.5% reported suicidal ideation (Hong *et al.*, 2020, Hu *et al.*, 2020, Tu *et al.*, 2020, Xiong *et al.*, 2020). Up to 60% reported poor sleep quality (Tu *et al.*, 2020). Again, also in nurses, female gender was related with higher scores of depression, anxiety and trauma-related disorders (Hacimusalar *et al.*, 2020, Cabarkapa *et al.*, 2020, Chen *et al.*, 2020, AlAteeq *et al.*, 2020), although there are also negative reports concerning the effect of gender (Xiong *et al.*, 2020). Other risk factors included lack of access to adequate personal protective equipment (Arnetz *et al.*, 2020).

When considering health care workers as a whole, anxiety disorders were present in 10–27.1% (Wang *et al.*, 2020, Awano *et al.*, 2020, Badahdah *et al.*, 2020, Salopek-Ziha *et al.*, 2020), while depression was present in 11–27.9% (Salopek-Ziha *et al.*, 2020, Awano *et al.*, 2020). There is also a high prevalence of

Table 6. Rates of history of suicidal attempts and change in suicidal ideation in subjects groups by history of depression

	History of suicidal attempts				Change in suicidal ideation											
					In subjects without history of depression						In subjects with history of depression					
	Never	Once	2–3 times	At least once	Very much decreased	Decreased	Unchanged	Increased	Very much increased	Any increase	Very much decreased	Decreased	Unchanged	Increased	Very much increased	Any increase
<i>Females</i>																
Doctor	99.16	0.84	0.00	0.84	3.30	0.00	80.22	16.48	0.00	16.48	0.00	0.00	92.86	7.14	0.00	7.14
Nurse	96.79	2.33	0.87	3.21	7.66	0.00	85.17	5.74	1.44	7.18	20.15	2.24	68.66	8.96	0.00	8.96
Other clinical health professional	97.41	2.25	0.34	2.59	4.69	0.50	90.79	3.85	0.17	4.02	2.06	2.41	73.88	21.31	0.34	21.65
Administration staff	100.00	0.00	0.00	0.00	0.00	0.00	91.30	4.35	4.35	8.70	0.00	0.00	100.00	0.00	0.00	0.00
Other staff	87.25	8.82	3.92	12.75	3.70	0.00	88.89	7.41	0.00	7.41	0.00	4.76	76.19	0.00	19.05	19.05
Total	96.92	2.44	0.64	3.08	4.78	0.29	88.63	5.64	0.67	6.30	6.46	2.15	75.54	14.87	0.98	15.85
<i>Males</i>																
Doctor	98.99	0.00	1.01	1.01	3.45	1.15	94.25	1.15	0.00	1.15	0.00	0.00	100.00	0.00	0.00	0.00
Nurse	100.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other clinical health professional	97.97	2.03	0.00	2.03	0.00	0.00	82.57	13.76	3.67	17.43	0.00	0.00	82.05	10.26	7.69	17.95
Administration staff	93.94	3.03	3.03	6.06	0.00	0.00	36.84	63.16	0.00	63.16	0.00	0.00	100.00	0.00	0.00	0.00
Other staff	100.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	100.00
Total	98.12	1.25	0.63	1.88	1.20	0.40	85.66	11.16	1.59	12.75	0.00	0.00	85.29	10.29	4.41	14.71

Table 7. Rates of believing in various conspiracy theories related to the COVID-19 outbreak, with subjects grouped by gender and occupational position

	No history of depression					History of depression				
	I don't believe it at all	A little bit	Maybe	Much	Very much	I don't believe it at all	A little bit	Maybe	Much	Very much
Do you believe that the COVID-19 vaccine was ready even before the virus broke out and they conceal it from us for the benefit of pharmaceutical companies?										
<i>Females</i>										
Doctor	68.13	13.19	16.48	2.20	0.00	60.71	28.57	10.71	0.00	0.00
Nurse	36.84	12.92	17.70	16.75	15.79	24.63	2.24	64.18	4.48	4.48
Other clinical health professional	49.58	15.58	23.95	7.37	3.52	50.86	2.41	31.27	7.22	8.25
Administration staff	8.70	21.74	47.83	4.35	17.39	48.65	8.11	32.43	0.00	10.81
Other staff	24.69	7.41	53.09	14.81	0.00	95.24	0.00	4.76	0.00	0.00
Total	44.03	14.61	25.88	9.17	6.30	46.18	4.11	37.77	5.28	6.65
<i>Males</i>										
Doctor	83.91	13.79	1.15	1.15	0.00	100.00	0.00	0.00	0.00	0.00
Nurse	33.33	16.67	16.67	16.67	16.67	0.00	0.00	0.00	0.00	0.00
Other clinical health professional	37.61	10.09	35.78	2.75	13.76	51.28	17.95	25.64	0.00	5.13
Administration staff	100.00	0.00	0.00	0.00	0.00	0.00	7.14	92.86	0.00	0.00
Other staff	33.33	0.00	66.67	0.00	0.00	100.00	0.00	0.00	0.00	0.00
Total	57.77	10.36	21.91	2.79	7.17	51.47	11.76	33.82	0.00	2.94
Do you believe that COVID-19 was created in a laboratory to be used as a biochemical weapon for the extermination of the human population?										
<i>Females</i>										
Doctor	37.36	32.97	23.08	6.59	0.00	60.71	7.14	10.71	21.43	0.00
Nurse	23.92	10.05	35.89	15.79	14.35	33.58	4.48	54.48	4.48	2.99
Other clinical health professional	34.34	18.59	25.29	14.57	7.20	34.36	13.06	31.27	5.84	15.46
Administration staff	21.74	8.70	56.52	8.70	4.35	40.54	32.43	16.22	0.00	10.81
Other staff	19.75	6.17	59.26	12.35	2.47	76.19	14.29	9.52	0.00	0.00
Total	30.56	16.52	31.90	13.56	7.45	37.77	11.94	34.25	5.68	10.37
<i>Males</i>										
Doctor	70.11	13.79	14.94	0.00	1.15	75.00	0.00	25.00	0.00	0.00
Nurse	33.33	16.67	33.33	16.67	0.00	0.00	0.00	0.00	0.00	0.00
Other clinical health professional	30.28	11.93	24.77	19.27	13.76	41.03	17.95	25.64	7.69	7.69
Administration staff	78.95	21.05	0.00	0.00	0.00	7.14	0.00	7.14	0.00	85.71
Other staff	16.67	0.00	83.33	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Total	47.01	12.75	24.30	9.56	6.37	38.24	14.71	20.59	4.41	22.06
Do you believe that COVID-19 is the result of 5G technology antenna?										
<i>Females</i>										
Doctor	94.51	0.00	4.40	1.10	0.00	78.57	21.43	0.00	0.00	0.00
Nurse	58.85	5.74	20.10	8.13	7.18	58.96	26.87	11.94	2.24	0.00
Other clinical health professional	75.71	7.87	12.73	2.68	1.01	79.38	8.59	7.90	3.09	1.03
Administration staff	86.96	4.35	4.35	4.35	0.00	89.19	0.00	0.00	0.00	10.81
Other staff	50.62	27.16	22.22	0.00	0.00	95.24	0.00	4.76	0.00	0.00
Total	72.78	8.02	13.66	3.53	2.01	75.34	13.11	7.83	2.35	1.37

(Continued)

Table 7. (Continued)

	No history of depression					History of depression				
	I don't believe it at all	A little bit	Maybe	Much	Very much	I don't believe it at all	A little bit	Maybe	Much	Very much
<i>Males</i>										
Doctor	100.00	0.00	0.00	0.00	0.00	75.00	0.00	25.00	0.00	0.00
Nurse	66.67	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other clinical health professional	90.83	0.00	8.26	0.00	0.92	89.74	0.00	10.26	0.00	0.00
Administration staff	100.00	0.00	0.00	0.00	0.00	0.00	7.14	7.14	0.00	85.71
Other staff	100.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
Total	93.63	0.00	5.98	0.00	0.40	69.12	1.47	11.76	0.00	17.65
Do you believe that COVID-19 appeared accidentally from human contact with animals and it was something that generally happens and was generally expected?										
<i>Females</i>										
Doctor	3.30	21.98	17.58	39.56	17.58	10.71	0.00	3.57	67.86	17.86
Nurse	19.62	11.48	41.15	17.70	10.05	19.40	8.96	55.22	16.42	0.00
Other clinical health professional	19.60	15.24	36.85	22.28	6.03	17.87	10.65	36.43	23.02	12.03
Administration staff	26.09	30.43	34.78	8.70	0.00	0.00	32.43	48.65	10.81	8.11
Other staff	22.22	7.41	55.56	14.81	0.00	4.76	0.00	14.29	47.62	33.33
Total	18.82	15.47	37.34	21.39	6.97	16.05	10.76	39.53	23.87	9.78
<i>Males</i>										
Doctor	1.15	0.00	39.08	14.94	44.83	0.00	0.00	25.00	0.00	75.00
Nurse	16.67	0.00	66.67	0.00	16.67	0.00	0.00	0.00	0.00	0.00
Other clinical health professional	33.03	11.01	30.28	22.94	2.75	5.13	10.26	56.41	25.64	2.56
Administration staff	0.00	0.00	78.95	21.05	0.00	0.00	7.14	85.71	7.14	0.00
Other staff	0.00	16.67	66.67	16.67	0.00	0.00	100.00	0.00	0.00	0.00
Total	15.94	5.98	42.23	17.93	17.93	2.94	11.76	54.41	16.18	14.71
Do you believe that COVID-19 has much lower mortality rate but there is misinformation and terror-inducing propaganda?										
<i>Females</i>										
Doctor	49.45	4.40	16.48	25.27	4.40	46.43	3.57	28.57	21.43	0.00
Nurse	40.19	11.48	27.75	9.09	11.48	29.10	11.19	40.30	12.69	6.72
Other clinical health professional	35.51	22.11	22.45	14.24	5.70	25.77	22.34	30.58	15.81	5.50
Administration staff	39.13	17.39	17.39	0.00	26.09	48.65	40.54	0.00	10.81	0.00
Other staff	19.75	7.41	50.62	7.41	14.81	38.10	28.57	33.33	0.00	0.00
Total	36.68	17.00	24.83	12.70	8.79	29.94	19.96	30.92	14.29	4.89
<i>Males</i>										
Doctor	56.32	25.29	18.39	0.00	0.00	50.00	0.00	25.00	25.00	0.00
Nurse	0.00	33.33	50.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00
Other clinical health professional	26.61	15.60	33.03	19.27	5.50	25.64	7.69	53.85	7.69	5.13
Administration staff	0.00	36.84	0.00	63.16	0.00	0.00	0.00	85.71	14.29	0.00
Other staff	0.00	66.67	0.00	16.67	16.67	0.00	0.00	100.00	0.00	0.00
Total	31.08	25.50	24.30	15.54	3.59	23.53	4.41	57.35	11.76	2.94

(Continued)

Table 7. (Continued)

	No history of depression					History of depression				
	I don't believe it at all	A little bit	Maybe	Much	Very much	I don't believe it at all	A little bit	Maybe	Much	Very much
Do you believe that COVID-19 is a creation of the world's powerful leaders to create a global economic crisis?										
<i>Females</i>										
Doctor	40.66	0.00	38.46	7.69	13.19	64.29	14.29	10.71	10.71	0.00
Nurse	33.97	11.48	27.27	13.88	13.40	26.87	20.15	46.27	4.48	2.24
Other clinical health professional	35.85	17.92	25.29	13.74	7.20	36.77	13.40	25.77	17.87	6.19
Administration staff	8.70	26.09	52.17	4.35	8.70	48.65	40.54	0.00	0.00	10.81
Other staff	19.75	7.41	53.09	4.94	14.81	57.14	38.10	4.76	0.00	0.00
Total	32.86	14.80	30.75	11.94	9.65	37.38	18.20	27.59	11.94	4.89
<i>Males</i>										
Doctor	80.46	13.79	4.60	1.15	0.00	75.00	0.00	0.00	25.00	0.00
Nurse	16.67	0.00	50.00	16.67	16.67	0.00	0.00	0.00	0.00	0.00
Other clinical health professional	21.10	17.43	41.28	5.50	14.68	23.08	46.15	7.69	17.95	5.13
Administration staff	100.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	85.71
Other staff	0.00	16.67	83.33	0.00	0.00	100.00	0.00	0.00	0.00	0.00
Total	45.82	13.55	29.08	3.98	7.57	30.88	26.47	7.35	14.71	20.59
Do you believe that COVID-19 is a sign of divine power to destroy our planet?										
<i>Females</i>										
Doctor	74.73	16.48	7.69	1.10	0.00	53.57	42.86	3.57	0.00	0.00
Nurse	69.38	13.40	15.79	0.00	1.44	76.87	9.70	13.43	0.00	0.00
Other clinical health professional	77.22	13.40	7.20	1.51	0.67	74.23	15.12	10.65	0.00	0.00
Administration staff	69.57	8.70	21.74	0.00	0.00	59.46	8.11	32.43	0.00	0.00
Other staff	76.54	3.70	4.94	14.81	0.00	85.71	14.29	0.00	0.00	0.00
Total	74.88	12.61	9.74	2.10	0.67	73.19	14.68	12.13	0.00	0.00
<i>Males</i>										
Doctor	86.21	0.00	13.79	0.00	0.00	75.00	25.00	0.00	0.00	0.00
Nurse	83.33	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other clinical health professional	82.57	14.68	2.75	0.00	0.00	92.31	0.00	7.69	0.00	0.00
Administration staff	100.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	85.71
Other staff	100.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
Total	86.45	6.37	7.17	0.00	0.00	73.53	4.41	4.41	0.00	17.65
The information and use of the internet worry me about the issue regarding the COVID-19:										
<i>Females</i>										
Doctor	29.67	29.67	20.88	17.58	2.20	57.14	14.29	21.43	7.14	0.00
Nurse	44.02	31.58	14.83	5.26	4.31	17.91	38.81	37.31	0.75	5.22
Other clinical health professional	25.13	33.33	23.28	14.91	3.35	20.62	20.96	25.09	22.68	10.65
Administration staff	17.39	39.13	13.04	26.09	4.35	75.68	16.22	0.00	8.11	0.00
Other staff	40.74	14.81	40.74	3.70	0.00	23.81	14.29	33.33	9.52	19.05
Total	29.99	31.61	22.06	13.09	3.25	26.03	24.66	26.61	14.48	8.22

(Continued)

Table 7. (Continued)

	No history of depression					History of depression				
	I don't believe it at all	A little bit	Maybe	Much	Very much	I don't believe it at all	A little bit	Maybe	Much	Very much
<i>Males</i>										
Doctor	65.52	33.33	0.00	0.00	1.15	25.00	25.00	25.00	25.00	0.00
Nurse	50.00	16.67	16.67	0.00	16.67	0.00	0.00	0.00	0.00	0.00
Other clinical health professional	33.03	35.78	22.02	5.50	3.67	12.82	51.28	10.26	23.08	2.56
Administration staff	15.79	84.21	0.00	0.00	0.00	85.71	0.00	0.00	14.29	0.00
Other staff	66.67	0.00	16.67	16.67	0.00	0.00	0.00	100.00	0.00	0.00
Total	46.61	34.66	11.95	3.59	3.19	29.41	33.82	14.71	20.59	1.47
Generally, most of the internet sources regarding information about COVID-19 are misinforming/misleading:										
<i>Females</i>										
Doctor	26.37	14.29	34.07	23.08	2.20	42.86	3.57	25.00	28.57	0.00
Nurse	5.74	17.70	35.89	31.58	9.09	0.00	25.37	27.61	36.57	10.45
Other clinical health professional	6.37	24.46	27.30	30.49	11.39	4.47	27.49	34.36	24.74	8.93
Administration staff	0.00	39.13	21.74	4.35	34.78	0.00	8.11	81.08	0.00	10.81
Other staff	3.70	11.11	53.09	16.05	16.05	0.00	47.62	19.05	28.57	4.76
Total	7.35	22.16	31.23	27.22	12.03	4.89	25.05	34.83	26.42	8.81
<i>Males</i>										
Doctor	44.83	14.94	24.14	14.94	1.15	0.00	0.00	75.00	25.00	0.00
Nurse	0.00	16.67	33.33	33.33	16.67	0.00	0.00	0.00	0.00	0.00
Other clinical health professional	9.17	16.51	51.38	17.43	5.50	0.00	25.64	35.90	30.77	7.69
Administration staff	63.16	0.00	36.84	0.00	0.00	0.00	7.14	92.86	0.00	0.00
Other staff	0.00	66.67	0.00	0.00	33.33	0.00	100.00	0.00	0.00	0.00
Total	24.30	18.33	35.86	15.14	6.37	0.00	20.59	52.94	22.06	4.41

up to 28–98.5% concerning symptoms of anxiety (Zhang *et al.*, 2020, Xing *et al.*, 2020, Suryavanshi *et al.*, 2020, Shechter *et al.*, 2020, Lai *et al.*, 2020, Firew *et al.*, 2020, Awano *et al.*, 2020, Juan *et al.*, 2020, Khanal *et al.*, 2020, Que *et al.*, 2020, Sahin *et al.*, 2020), 25.2–92.5% concerning those of depression (Zhang *et al.*, 2020, Xing *et al.*, 2020, Suryavanshi *et al.*, 2020, Song *et al.*, 2020, Shechter *et al.*, 2020, Sahin *et al.*, 2020, Lai *et al.*, 2020, Khanal *et al.*, 2020, Firew *et al.*, 2020, Awano *et al.*, 2020, Juan *et al.*, 2020, Que *et al.*, 2020), and 32–37.5% for symptoms of peritraumatic dissociation (Juan *et al.*, 2020, Azoulay *et al.*, 2020). Insomnia was reported by 28.75–50.4% (Sahin *et al.*, 2020, Que *et al.*, 2020, Lai *et al.*, 2020, Khanal *et al.*, 2020). PTSD was reported in 9.1–9.8% (Song *et al.*, 2020, Wang *et al.*, 2020). Burnout and distress are also frequently reported (Zhang *et al.*, 2020, Firew *et al.*, 2020, Sahin *et al.*, 2020, Salopek-Ziha *et al.*, 2020, Shechter *et al.*, 2020) as well as low quality of life (Suryavanshi *et al.*, 2020).

In general, being female appeared to confer greater risk (Cabarkapa *et al.*, 2020, Elkholy *et al.*, 2020, Kang *et al.*, 2020, Lai *et al.*, 2020, Ning *et al.*, 2020), and this was also true concerning individuals with a history of mental disorder (Sahin *et al.*, 2020).

Meta-analytical studies reported that in health care professionals anxiety was found in 23–38% and depression in 22–32% and was similar with that of the general population and insomnia in 38.9% (Luo *et al.*, 2020, Pappa *et al.*, 2020). In general, during epidemics, depressive symptoms are reported in 27.5–50.7%, insomnia symptoms in 34–36.1% and severe anxiety symptoms in 45%. General psychiatric symptoms during outbreaks have a range comprised between 17.3 and 75.3%; high levels of stress related to working are reported in 18.1–80.1% (Preti *et al.*, 2020).

The results of the current study, while in accord with more or less with the literature, point also to the decisive effect of the previous history of depression, and in this way, our results identify a particularly vulnerable population among HCPs.

Also, the high rates of believing in conspiracy theories are in accord with findings from other countries (Ahmed *et al.*, 2020, Uscinski *et al.*, 2020, Fountoulakis & in 2021) and are a worrying manifestation. Conspiracy beliefs – especially those regarding science, medicine, and health-related topics – are widespread (Oliver and Wood, 2014) and capable of prompting people to eschew appropriate health-related behaviours (Jolley and Douglas, 2014, Bogart *et al.*, 2010). Being widely spread within

HCPs is an even greater danger for public health. Our results are in accord with the announcement by the Greek Ministry of Health that by August 19, 2021 in hospitals, and in primary care units, 90% and 93% of doctors, 78% and 85% of nurses, 79% and 82% of administration staff and 74% and 83% of other health professionals, respectively, were either vaccinated or had suffered from COVID-19 and are immune. The percentage that had suffered and was at that time immune was 3% and 4% of doctors, 5% and 6% of nurses, 6% and 7% of administration staff and 5% and 6% of the rest of health professionals.

The probability they constitute a dysfunctional coping mechanism as they probably constitute in the general population is strong also here (Fountoulakis et al., 2020a, Freyler et al., 2019, Tomljenovic et al., 2020). This probability of an affective component in the frame of a dysfunctional copying mechanism is in accord with the finding that believing was more frequent in females and could be explained through higher temperamental levels of anxiety and harm avoidance (Sacher et al., 2013, Aleman and Swart, 2008, Fischer et al., 2004, Lee et al., 2005, Lee et al., 2002, McClure et al., 2004, Schirmer et al., 2004, Schroeder et al., 2004, Fusar-Poli et al., 2009).

However, one should have in mind that believing in conspiracy theories does not necessarily mean that one acts in accord with these beliefs. On the contrary, the discrepancy between beliefs and behaviour is what distinguishes conspiracy beliefs from delusional ideas.

Conclusion

The current paper reports high rates of depression, distress and suicidal thoughts in the HCPs during the lockdown, with a high prevalence of beliefs in conspiracy theories. Female gender as well as previous history of depression acted as risk factors, while it is possible that belief in conspiracy theories acts as a protective factor. These results are alarming in many ways, especially concerning the wide prevalence of believing in conspiracy theories and the suggested impact of these beliefs on mental health and health-related behaviours. Probably, countries should invest in the targeted training and education of health professionals concerning health-related conspiracy theories but also on topics of specific interest, for example better education on how the system works and why some assumptions (e.g. the inflated number of deaths theory) could not be right. Overall, it seems unlikely that a single country can make a difference concerning in its own people; internationally coordinated action seems necessary.

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KNF conceived and designed the study. The other authors participated formulating the final protocol, designing and supervising the data collection and creating the final dataset. KNF did the data analysis and wrote the first draft of the paper. All authors participated in interpreting the data and developing further stages and the final version of the paper.

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