

Article

The COVID-19 Outbreak and Psychological Distress in Healthcare Workers: The Role of Personality Traits, Attachment Styles, and Sociodemographic Factors

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Abstract: The COVID-19 outbreak has exposed healthcare professionals (HPs) to increased workloads and a high risk of contagion. The present study aimed at examining the effects of the COVID-19 outbreak on the mental health of HPs in Italy, investigating the role of attachment style, personality traits, and sociodemographic variables. An online survey was administered from 18 to 22 March 2020. Respondents were 296 HPs (77% female, 23% male; aged 21–77 years). The measures employed were a sociodemographic questionnaire, the Personality Inventory for DSM-5-BF (PID-5-BF), the Attachment Style Questionnaire (ASQ), and the Depression, Anxiety and Stress Scale–21 (DASS-21). The findings showed that PID-5-BF Negative Affect, female gender, and ASQ Preoccupation with Relationships predicted high levels of stress, anxiety, and depression, respectively. Furthermore, PID-5-BF Detachment predicted higher psychological distress, as captured in the DASS-21 total score and DASS-21 Depression score, and having an infected loved one was associated with high psychological distress. Overall, the results suggest that HPs are experiencing high rates of psychological distress during the pandemic, and that specific attachment styles and personality traits might be useful in identifying those at greatest risk for developing mental health symptoms.

Keywords: healthcare workers; psychological factors; attachment style; personality traits; mental health; COVID-19; ASQ; PID-5-BF; DASS-21

1. Introduction

On 30 January 2020, the World Health Organization declared the coronavirus disease 2019 (COVID-19) outbreak a public health emergency of international concern. Many governments issued exceptional measures to reduce the spread of the virus, including lockdowns, curfews, and social distancing [1]. According to the literature [2–5], the ongoing pandemic and its related protective measures have had a negative impact on the mental health of the general population, in the form of increased psychological distress, depression, anxiety, and post-traumatic stress symptoms, as well as sleep disturbance, parental exhaustion, and suicidality. Researchers have sought to identify factors associated with negative mental health outcomes during the pandemic. While some studies have yielded contradictory results, a recent meta-analysis indicated that female gender, younger age, lower socioeconomic status, rural residency, and a history of specific medical conditions

are associated with an increased likelihood of experiencing psychological distress during this time [6].

While most of the relevant studies have focused on the impact of the COVID-19 pandemic on the mental health of the general population, some research has specifically examined the effects of the pandemic on specific populations (e.g., parents, psychiatric patients, overweight/obese individuals) [7–9]. For instance, a recent systematic review found that COVID-19 patients showed high levels of post-traumatic stress symptoms and higher depressive symptoms relative to the general population [9]. Moreover, patients with pre-existing psychiatric disorders have reported a worsening of psychiatric symptoms during the pandemic. Further, Mazza et al. found that certain personality traits represented important risk factors for parents' mental health difficulties during the lockdown [7]. Specifically, the authors found that parental neuroticism was significantly associated with parental distress, which was also related to children's emotional and behavioral difficulties. Furthermore, high levels of parent neuroticism (i.e., worry, nervousness, emotional instability, etc.) were found to increase parent psychological distress, mainly in terms of anxiety, depression, and social dysfunction.

Among these specific populations, healthcare professionals (HPs), who are identified in Italy as professionals who are authorized by the State to conduct activities involved in prevention, diagnosis, cure, and rehabilitation [10] (http://www.salute.gov.it/portale/temi/p2_4.jsp?lingua=italiano&area=professioni-sanitarie. Accessed on 15 December 2020), represent frontline workers who are faced with the greatest and most direct exposure to COVID-19. Attention to HPs is warranted given their increased workload and high risk of contagion, representing risk factors for not only physical health, but also mental well-being (see [9] for a systematic review). On this matter, the literature reports high psychological distress among HPs during the COVID-19 pandemic, especially among nurses, females, younger medical staff, and frontline workers [11–14].

Of note, perceived danger triggers the attachment motivational system; it is a common conception that adults with a secure attachment style are generally more resilient in stressful situations, demonstrating adaptive coping strategies [15,16]. In support of this view, international research has found that secure attachment protects against the development of post-traumatic stress symptoms [17,18], and insecure attachment relates to increased perceived stress, somatization, and negative affectivity [18–20]. With respect to HPs, the role of attachment style in situations of prolonged stress or trauma is under-investigated. A single review indicated that secure attachment and anxious-preoccupied attachment are associated with lower and higher levels of burnout, respectively [21]. Similarly, research has found that fearful-avoidant attached nurses report significantly higher levels of job-related stress compared to nurses with secure attachment [22,23]. However, another study yielded more ambiguous results: on the one hand, securely and insecurely attached hospice nurses were found to show no differences in the frequency of stressful experiences or number of psychological components of ill health; on the other hand, the two groups differed in the number of absences from work and the frequency with which they sought social support [24].

In general, there is insufficient research on the relationship between attachment style and mental health during the COVID-19 pandemic. Moccia et al. reported that features of both secure and avoidant attachment, compared to those of anxious attachment, protected against higher psychological distress [25]. Starting from these results, the present study aimed at investigating the effect of attachment style, personality dysfunction, and sociodemographic variables on mental health in HPs during the COVID-19 pandemic.

2. Materials and Methods

2.1. Participants

Data were collected through an online survey administered between 18 and 22 March 2020 to 337 respondents. The inclusion criteria were as follows: (a) aged 18 years or older, (b) living in Italy, and (c) working as an HP. A total of 19 participants were excluded be-

cause they were not working as an HP, 12 were excluded because they did not complete the survey, 6 were excluded because they lived outside of Italy, and 4 were excluded because they did not provide informed consent. Thus, the final sample consisted of 296 Italian participants: 228 (77%) women and 68 (23%) men. The mean age of the sample was 38.89 years (12.32; range 21–77). More descriptive statistics, including all of the characteristics considered, are presented in Table 1. In Table S1 (Supplementary Materials), means and standard deviations for all the scales (i.e., DASS-21, ASQ, and PID-5-BF) computed considering the whole sample are presented.

Table 1. Descriptive statistics of the sample.

Characteristic	Group	<i>n</i> (%)
Gender	Female	228 (77%)
	Male	68 (23%)
Age <i>M</i> (<i>SD</i>), Min–Max	38.89 (12.32), 21–77	296 (100%)
Employment status	Employee	140 (47.3%)
	Freelancer	156 (52.7%)
Education	High school diploma	13 (4.4%)
	Graduate	129 (43.6%)
	Postgraduate	154 (52%)
Occupation	Social worker	8 (2.7%)
	Doctor	85 (28.7%)
	Pharmacist	9 (3%)
	Physiotherapist	16 (5.4%)
	Dental hygienist	2 (0.7%)
	Nurse	38 (12.8%)
	Speech therapist	7 (2.4%)
	Psychologist/psychotherapist	103 (34.8%)
	Social health worker	7 (2.4%)
	Technician	21 (7.1%)
Marital status	Unmarried/widower	142 (48%)
	Separated/divorced	17 (5.7%)
	Married	137 (46.3%)
Child(ren) in house	Yes	98 (33.1%)
	No	198 (66.9%)
Region of residence	North	63 (21.3%)
	South	150 (50.7%)
	Center	83 (28%)
Spending social distancing period with	With others	248 (83.8%)
	Alone	48 (16.2%)
Infected acquaintances	Yes	89 (30.1%)
	No	207 (69.9%)
Infected loved ones	Yes	23 (7.8%)
	No	273 (92.2%)

Table 1. Cont.

Characteristic	Group	n (%)
History of stressful situations	Yes	121 (40.9%)
	No	175 (59.1%)
History of medical problems	Yes	78 (26.4%)
	No	218 (73.6%)
Psychological support or psychotherapy	Yes	73 (24.7%)
	No	223 (75.3%)

2.2. Procedures

The questionnaire was administered on an online survey platform, Qualtrics, which participants accessed via a designated link. The link was disseminated through the main means of communication and social networks, in order to reach a large number among all the healthcare professionals throughout Italy, during the social distancing and lockdown period. Participants voluntarily responded to the anonymous survey and indicated their informed consent within the survey, prior to providing feedback. Qualtrics automatically reports the IP code that we have used together with sociodemographic data to ensure that the survey was completed once by each participant. All procedures were clearly explained, and participants could interrupt or quit the survey at any point without explaining their reasons for doing so.

2.3. Data Collection

The online survey, which comprised part of a wider research project, covered several areas: (a) sociodemographic details; (b) acquaintances infected with COVID-19; (c) loved ones infected with COVID-19; (d) previous physical diseases (e.g., cardiovascular or oncological pathology); (e) previous stressful situations (e.g., dismissal, mourning); (f) psychological treatment or psychotherapy; (g) personality functioning; (h) attachment style; and (i) the psychological impact of COVID-19 on depression, anxiety, and stress levels over the past 7 days.

2.3.1. Sociodemographic Data

Sociodemographic data were collected on biological sex, age, education, marital and parental status, employment status, region of residence during the COVID-19 outbreak, and history of stressful situations and medical problems. Moreover, participants were asked to report whether any acquaintances or loved ones were (or had been) infected with COVID-19.

2.3.2. Personality Dysfunction

Personality functioning was investigated using the Personality Inventory for DSM-5–Brief Form–Adult (PID-5-BF) [26]. The PID-5-BF is a 25-item self-rated personality trait assessment scale, which measures five personality trait domains: negative affect (e.g., “I worry about almost everything”; “I get emotional easily, often for a small reason”), detachment (e.g., “I often feel like nothing I do matters”; “I steer clear of romantic relationships”), antagonism (e.g., “I don’t like to get too intimate with people”; “I long for attention”), disinhibition (e.g., “People would describe me as reckless”; “I feel like I act completely on impulse”), and psychoticism (e.g., “I often have thoughts that make sense to me, but others say they’re weird”; “Often things around me seem unreal, or more real than usual”). Each domain is measured through five items that are rated on a four-point Likert scale ranging from 0 (*very false or often false*) to 3 (*very true or often true*). The overall measure generates scores in the range of 0–75, with higher scores indicating greater overall personality dysfunction. Furthermore, each trait domain receives a score in the range of 0–5, with higher scores indicating greater dysfunction in that specific domain. In the Italian validation study [27], Cronbach’s alpha values for the PID-5-BF scales ranged from

0.59 (Detachment) to 0.77 (Psychoticism), and Cronbach's alpha for the PID-5-BF total score was 0.83, showing good internal consistency. In the present sample, Cronbach's alpha values for the PID-5-BF scales ranged from 0.62 (Antagonism) to 0.71 (Disinhibition), and Cronbach's alpha for the PID-5-BF total score was 0.88, again showing good reliability.

2.3.3. Attachment Style

The Italian version of the Attachment Style Questionnaire (ASQ) was used to evaluate attachment style [28]. The ASQ is a self-report instrument containing 40 items articulated in five subscales: Confidence (e.g., "Overall, I am a worthwhile person"; "I feel confident about relating to others"), Discomfort with Closeness (e.g., "I prefer to keep to myself"; "I worry about people getting too close"), Relationships as Secondary (e.g., "People's worth should be judged based on their success"; "Achieving things is more important than building relationships"), Need for Approval (e.g., "It's important to me that others like me"; "Sometimes I think I am no good at all"), and Preoccupation with Relationships (e.g., "I worry a lot about my relationships"; "I often feel left out or alone"). All subscales are rated on a six-point scale ranging from 1 (*totally disagree*) to 6 (*totally agree*). The ASQ obtained good reliability in the Italian validation study with a non-clinical sample [28], generating Cronbach's alpha values of 0.69 for Confidence, 0.68 for Discomfort with Closeness, 0.73 for Relationships as Secondary, 0.69 for Need for Approval, and 0.64 for Preoccupation with Relationships. However, in the present sample, the Confidence subscale obtained an unacceptable Cronbach's alpha (0.47); therefore, this scale was excluded from the analysis. All other ASQ subscales obtained good reliability, with Cronbach's alpha values of 0.62 for Discomfort with Closeness, 0.73 for Relationships as Secondary, 0.78 for Preoccupation with Relationships, and 0.79 for Need for Approval.

2.3.4. Mental Health

The Depression, Anxiety, and Stress Scale-21 (DASS-21) was used to assess mental health [29]. This measure has been found to be reliable and valid for the assessment of mental health in the Chinese population [30,31], and it has been applied in studies related to the SARS outbreak [32]. The DASS-21 comprises three self-report scales measuring the emotional states of depression, anxiety, and stress. Each scale contains seven items, divided into subscales with similar content. Items 3, 5, 10, 13, 16, 17, and 21 comprise the Depression subscale (e.g., "In the last 7 days, I couldn't seem to experience any positive feeling at all"; "In the last 7 days, I found it difficult to work up the initiative to do things"); items 2, 4, 7, 9, 15, 19, and 20 comprise the Anxiety subscale (e.g., "In the last 7 days, I experienced trembling"; "In the last 7 days, I was worried about situations in which I might panic and make a fool of myself"); and items 1, 6, 8, 11, 12, 14, and 18 comprise the Stress subscale (e.g., "In the last 7 days, I tended to over-react to situations"; "In the last 7 days, I felt that I was using a lot of nervous energy"). All subscales are rated on a four-point Likert scale ranging from 0 (*never*) to 3 (*almost always*). DASS-21 outcome scores are classified into three ranges: average, high, and extremely high. The measure obtained high reliabilities in the Italian validation study [29], with Cronbach's alpha values of 0.74, 0.82, and 0.85 for the Anxiety, Depression, and Stress subscales, respectively; Cronbach's alpha for the total score was 0.90. In the present sample, Cronbach's alpha values were 0.86, 0.84, and 0.90 for the Depression, Anxiety, and Stress subscales, respectively. Cronbach's alpha for the total score was 0.94.

In the present study, the DASS-21 total and subscale scores were classified as follows: normal for scores within 1 *SD* above the mean and high for scores >1 *SD* above the mean (see Table S2 in Supplementary Materials).

2.4. Statistical Analysis

To address the research questions, we subdivided the sample into two groups, according to normal versus high DASS-21 total and subscale scores (as described in Section 2.3.4). Analyses used standard univariate comparisons of continuous measures (ANOVAs) and

categorical measures (chi-square tests) to compare factors of interest (i.e., sociodemographic data, PID-5-BF scores, ASQ scores (except for the ASQ Confidence score)) in both groups. For each DASS-21 subscale, factors significantly associated with normal or high levels of distress/depression/anxiety/stress in the bivariate analyses were subsequently analyzed via multiple multivariate logistic regression. This generated odds ratios (ORs) and 95% confidence intervals (CIs), using normal/high psychological distress/depression/anxiety/stress as dependent outcomes. All statistical analyses were performed using SPSS Statistics 25.0 (IBM SPSS Statistics, New York, NY, USA).

3. Results

3.1. Analysis of Group Differences

3.1.1. Depression Anxiety Stress Scale-21 Total Score

Table 2 summarizes the statistically significant differences found with respect to the DASS-21 total score. No such differences were observed for educational level ($X^2 = 2.35$; $p = 0.308$), employment status ($X^2 = 1.79$; $p = 0.180$), region of residence ($X^2 = 5.40$; $p = 0.067$), infected acquaintances ($X^2 = 2.18$; $p = 0.140$), history of stressful situations ($X^2 = 0.20$; $p = 0.653$), history of medical problems ($X^2 = 0.03$; $p = 0.863$), spending social distancing period with others or alone ($X^2 = 0.02$; $p = 0.896$), psychological support or psychotherapy ($X^2 = 0.75$; $p = 0.385$), or ASQ Relationships as Secondary ($F = 2.12$; $p = 0.147$).

Table 2. Significant differences in sociodemographic and psychometric variables with respect to the DASS-21 total score.

Characteristic	Total	Normal	High	X^2 or F	p
Gender (n, %)				6.91	0.009
Female	228 (77)	166 (72.8)	62 (27.2)		
Male	68 (23)	60 (88.2)	8 (11.8)		
Children in house (n, %)				8.75	0.003
Yes	98 (33.1)	85 (86.7)	13 (13.3)		
No	198 (66.9)	141 (71.2)	57 (28.8)		
Infected loved ones (n, %)				5.43	0.020
Yes	23 (7.8)	13 (56.5)	10 (43.5)		
No	273 (92.2)	213 (78)	60 (22)		
Marital status (n, %)				8.42	0.015
Unmarried/widower	142 (48)	98 (69)	44 (31)		
Separated/divorced	17 (5.7)	15 (88.2)	2 (11.8)		
Married	137 (46.3)	113 (82.5)	24 (17.5)		
Age (M, SD)	38.89 (12.32)	40.19 (12.53)	34.71 (10.68)	10.89	0.001
ASQ (M, SD)					
Discomfort with Closeness	31.22 (6.85)	30.38 (6.60)	33.91 (7.00)	14.85	0.000
Need for Approval	18.04 (6.59)	16.79 (5.73)	22.07 (7.57)	38.72	0.000
Preoccupation with Relationships	26.69 (7.63)	25.42 (7.21)	30.77 (7.57)	28.71	0.000
PID-5-BF (M, SD)					
Negative Affect	4.34 (2.98)	3.70 (2.66)	6.40 (3.07)	51.26	0.000
Detachment	2.26 (2.58)	1.76 (2.18)	3.90 (3.09)	41.78	0.000
Antagonism	2.51 (2.38)	2.27 (2.28)	3.27 (2.54)	9.70	0.002
Disinhibition	2.57 (2.59)	2.38 (2.55)	3.16 (2.62)	4.83	0.029
Psychoticism	2.79 (2.57)	2.31 (2.29)	4.31 (2.82)	36.38	0.000

Abbreviations: df = degrees of freedom; X^2 = chi-square test; F = value of variance of the group means, p , statistical significance; ASQ, Attachment Style Questionnaire; PID-5-BF, Personality Inventory for DSM-5–Brief Form–Adult.

3.1.2. Depression Anxiety Stress Scale-21 Depression Subscale

With respect to DASS-21 Depression, Table 3 presents the statistically significant differences found. No such differences were observed for educational level ($X^2 = 4.91$; $p = 0.086$), employment status ($X^2 = 0.42$; $p = 0.515$), region of residence ($X^2 = 1.73$; $p = 0.421$), infected acquaintances ($X^2 = 3.52$; $p = 0.061$), infected loved ones ($X^2 = 1.84$; $p = 0.175$), history of stressful situations ($X^2 = 0.25$; $p = 0.616$), history of medical problems ($X^2 = 0.00$; $p = 0.955$), spending social distancing period with others or alone ($X^2 = 3.22$; $p = 0.073$), or psychological support or psychotherapy ($X^2 = 3.64$; $p = 0.056$).

Table 3. Significant differences in sociodemographic and psychometric characteristics for DASS-21 depression.

Characteristic	Total	Normal	High	X^2 or F	p
Gender (n, %)				5.01	0.025
Female	228 (77)	168 (73.7)	60 (26.3)		
Male	68 (23)	59 (86.8)	9 (13.2)		
Children in house (n, %)				11.97	0.001
Yes	98 (33.1)	87 (88.8)	11 (11.2)		
No	198 (66.9)	140 (70.7)	58 (29.3)		
Marital status (n, %)				12.71	0.002
Unmarried/widower	142 (48)	96 (67.6)	46 (32.4)		
Separated/divorced	17 (5.7)	15 (88.2)	2 (11.8)		
Married	137 (46.3)	116 (84.7)	21 (15.3)		
Age (M, SD)	38.89 (12.32)	40.30 (12.64)	34.28 (9.99)	13.15	0.000
ASQ (M, SD)					
Discomfort with Closeness	31.22 (6.85)	30.15 (6.66)	34.72 (6.33)	25.51	0.000
Relationships as Secondary	13.95 (5.25)	13.44 (5.15)	15.61 (5.29)	9.26	0.003
Need for Approval	18.04 (6.59)	16.75 (5.87)	22.26 (7.10)	42.07	0.000
Preoccupation with Relationships	26.69 (7.63)	25.04 (7.13)	32.10 (6.70)	53.30	0.000
PID-5-BF (M, SD)					
Negative Affect	4.34 (2.98)	3.65 (2.66)	6.61 (2.87)	63.09	0.000
Detachment	2.26 (2.58)	1.67 (2.13)	4.22 (2.98)	61.96	0.000
Antagonism	2.51 (2.38)	2.26 (2.28)	3.35 (2.50)	11.60	0.001
Disinhibition	2.57 (2.59)	2.28 (2.40)	3.52 (2.95)	12.74	0.000
Psychoticism	2.79 (2.57)	2.28 (2.22)	4.45 (2.92)	43.16	0.000

Abbreviations: df = degrees of freedom; X^2 = chi-square test; F = value of variance of the group means, p , statistical significance; ASQ, Attachment Style Questionnaire; PID-5-BF, Personality Inventory for DSM-5–Brief Form–Adult.

3.1.3. Depression Anxiety Stress Scale-21 Anxiety Subscale

Regarding DASS-21 Anxiety, Table 4 presents the statistically significant differences found. No such differences were observed for educational level ($X^2 = 3.43$; $p = 0.180$), employment status ($X^2 = 0.33$; $p = 0.568$), region of residence ($X^2 = 1.42$; $p = 0.493$), infected acquaintances ($X^2 = 0.19$; $p = 0.666$), infected loved ones ($X^2 = 3.48$; $p = 0.062$), history of stressful situations ($X^2 = 0.11$; $p = 0.743$), history of medical problems ($X^2 = 1.07$; $p = 0.301$), marital status ($X^2 = 5.29$; $p = 0.071$), spending social distancing period with others or alone ($X^2 = 1.56$; $p = 0.211$), psychological support or psychotherapy ($X^2 = 1.12$; $p = 0.290$), ASQ Relationships as Secondary ($F = 0.94$; $p = 0.332$), PID-5-BF Antagonism ($F = 2.73$; $p = 0.100$), or PID-5-BF Disinhibition ($F = 0.54$; $p = 0.462$).

3.1.4. Depression Anxiety Stress Scale-21 Stress Subscale

With respect to DASS-21 Stress, Table 5 summarizes the statistically significant differences found. No such differences were observed for educational level ($X^2 = 1.30$; $p = 0.521$), age ($F = 3.17$; $p = 0.076$), employment status ($X^2 = 1.46$; $p = 0.227$), children in house ($X^2 = 3.12$; $p = 0.077$), region of residence ($X^2 = 2.99$; $p = 0.223$), infected acquaintances

($X^2 = 3.17$; $p = 0.075$), infected loved ones ($X^2 = 2.81$; $p = 0.094$), history of stressful situations ($X^2 = 0.10$; $p = 0.751$), history of medical problems ($X^2 = 0.72$; $p = 0.398$), marital status ($X^2 = 1.95$; $p = 0.377$), spending social distancing period with others or alone ($X^2 = 1.34$; $p = 0.247$), psychological support of psychotherapy ($X^2 = 1.56$; $p = 0.211$), or ASQ Relationships as Secondary ($F = 1.52$; $p = 0.219$).

Table 4. Significant differences in sociodemographic and psychometric characteristics for DASS-21 anxiety.

Characteristic	Total	Normal	High	X^2 or F	p
Gender (n, %)				9.42	0.002
Female	228 (77)	182 (79.8)	46 (20.2)		
Male	68 (23)	65 (95.6)	3 (4.4)		
Children in house (n, %)				5.76	0.016
Yes	98 (33.1)	89 (90.8)	9 (9.2)		
No	198 (66.9)	158 (79.8)	40 (20.2)		
Age (M, SD)	38.89 (12.32)	39.94 (12.75)	33.59 (8.10)	11.24	0.001
ASQ (M, SD)					
Discomfort with Closeness	31.22 (6.85)	30.85 (6.53)	33.06 (8.12)	4.29	0.039
Need for Approval	18.04 (6.59)	17.28 (6.19)	21.84 (7.30)	20.81	0.000
Preoccupation with Relationships	26.69 (7.63)	25.99 (7.34)	30.20 (8.14)	12.97	0.000
PID-5-BF (M, SD)					
Negative Affect	4.34 (2.98)	3.98 (2.79)	6.14 (3.31)	23.10	0.000
Detachment	2.26 (2.58)	2.03 (2.37)	3.43 (3.25)	12.37	0.001
Psychoticism	2.79 (2.57)	2.61 (2.48)	3.69 (2.81)	7.50	0.007

Abbreviations: df = degrees of freedom; X^2 = chi-square test; F = value of variance of the group means, p , statistical significance; ASQ, Attachment Style Questionnaire; PID-5-BF, Personality Inventory for DSM-5–Brief Form–Adult.

Table 5. Significant differences in sociodemographic and psychometric characteristics for DASS-21 stress.

Characteristic	Total	Normal	High	X^2 or F	p
Gender (n, %)				4.71	0.030
Female	228 (77)	165 (72.4)	63 (27.6)		
Male	68 (23)	58 (85.3)	10 (14.7)		
ASQ (M, SD)					
Discomfort with Closeness	31.22 (6.85)	30.56 (6.49)	33.23 (7.54)	8.58	0.004
Need for Approval	18.04 (6.59)	17.00 (5.74)	21.22 (7.93)	24.36	0.000
Preoccupation with Relationships	26.69 (7.63)	25.46 (7.19)	30.44 (7.75)	25.33	0.000
PID-5-BF (M, SD)					
Negative Affect	4.34 (2.98)	3.76 (2.66)	6.10 (3.24)	37.84	0.000
Detachment	2.26 (2.58)	1.86 (2.27)	3.49 (3.07)	23.58	0.000
Antagonism	2.51 (2.38)	2.32 (2.30)	3.10 (2.52)	5.99	0.015
Disinhibition	2.57 (2.59)	2.39 (2.54)	3.11 (2.65)	4.31	0.039
Psychoticism	2.79 (2.57)	2.42 (2.31)	3.92 (2.96)	20.04	0.000

Abbreviations: df = degrees of freedom; X^2 = chi-square test; F = value of variance of the group means, p , statistical significance; ASQ, Attachment Style Questionnaire; PID-5-BF, Personality Inventory for DSM-5–Brief Form–Adult.

3.2. Multivariate Logistic Regression

A multiple logistic regression analysis was performed using the enter method. For the DASS-21 total score, logistic regression identified infected loved ones ($OR = 3.30$; $p = 0.24$) and PID-5-BF Detachment ($OR = 1.24$; $p = 0.12$) as predictors of high levels of psychological distress. Overall, prediction success was 81.8% (95.1% for normal and 38.6% for high classifications). The prediction model showed goodness of fit to the observed data

($X^2 = 71.34$, $p = 0.000$), and Nagelkerke's R^2 of 0.322 indicated a moderate relationship between prediction and grouping.

For DASS-21 Depression, logistic regression identified PID-5-BF Detachment (OR = 1.33; $p = 0.002$) and ASQ Preoccupation with Relationships (OR = 1.09; $p = 0.011$) as predictors of high levels of depression. Overall, prediction success was 82.1% (94.7% for normal and 40.6% for high classifications). The prediction model showed goodness of fit to the observed data ($X^2 = 85.21$; $p = 0.000$), and Nagelkerke's R^2 of 0.378 indicated a moderate relationship between prediction and grouping.

For DASS-21 Anxiety, logistic regression identified gender (OR = 4.23; $p = 0.027$) as a predictor of high levels of anxiety. Overall, prediction success was 84.1% (98.4% for normal and 12.2% for high classifications). The prediction model showed goodness of fit to the observed data ($X^2 = 38.66$; $p = 0.000$), and Nagelkerke's R^2 of 0.207 indicated a weak relationship between prediction and grouping.

Finally, for DASS-21 Stress, logistic regression identified BID-5-BF Negative Affect (OR = 1.17; $p = 0.036$) as a predictor of high levels of stress. Overall, prediction success was 79.7% (95.1% for normal and 32.9% for high classifications). The prediction model showed goodness of fit to the observed data ($X^2 = 43.99$; $p = 0.000$), and Nagelkerke's R^2 of 0.205 indicated a weak relationship between prediction and grouping. Table 6 presents the results of the logistic regressions.

Table 6. Logistic regressions.

Variable	OR [95% CI]	Wald	<i>p</i>
DASS-21 Total Score			
Gender	2.23 [0.86 5.74]	2.76	0.097
Age	0.97 [0.93 1.02]	1.40	0.236
Unmarried/widower [ref. Married]	1.12 [0.50 2.52]	0.08	0.780
Separated/divorced [ref. Married]	0.82 [0.14 4.74]	0.05	0.826
Children in house	1.02 [0.34 3.08]	0.00	0.977
Infected loved ones	3.30 [1.17 9.34]	5.08	0.024
ASQ Discomfort with Closeness	0.97 [0.91 1.03]	0.91	0.341
ASQ Need for Approval	1.02 [0.96 1.09]	0.45	0.502
ASQ Preoccupation with Relationships	1.02 [0.97 1.09]	0.64	0.424
PID-5-BF Negative Affect	1.14 [0.98 1.34]	2.71	0.100
PID-5-BF Detachment	1.24 [1.05 1.46]	6.27	0.012
PID-5-BF Antagonism	0.97 [0.82 1.14]	0.14	0.705
PID-5-BF Disinhibition	0.88 [0.76 1.02]	2.97	0.085
PID-5-BF Psychoticism	1.15 [0.96 1.38]	2.20	0.138
DASS-21 Depression			
Gender	1.86 [0.73 4.72]	1.68	0.195
Age	0.98 [0.93 1.02]	1.04	0.309
Unmarried/widower [ref. Married]	1.00 [0.43 2.31]	0.00	0.998
Separated/divorced [ref. Married]	0.64 [0.10 4.11]	0.23	0.635
Children in house	0.65 [0.20 2.08]	0.52	0.470
ASQ Discomfort with Closeness	0.99 [0.93 1.07]	0.02	0.880
ASQ Relationships as Secondary	0.99 [0.92 1.08]	0.02	0.888
ASQ Need for Approval	0.99 [0.92 1.06]	0.14	0.713
ASQ Preoccupation with Relationships	1.09 [1.02 1.16]	6.50	0.011
PID-5-BF Negative Affect	1.12 [1.02 1.16]	1.82	0.177
PID-5-BF Detachment	1.33 [1.12 1.60]	9.99	0.002
PID-5-BF Antagonism	0.91 [0.77 1.08]	1.18	0.277
PID-5-BF Disinhibition	0.97 [0.84 1.12]	0.16	0.687
PID-5-BF Psychoticism	1.06 [0.88 1.28]	0.33	0.566

Table 6. Cont.

Variable	OR [95% CI]	Wald	<i>p</i>
DASS-21 Anxiety			
Gender	4.23 [1.17 15.20]	4.87	0.027
Age	0.97 [0.92 1.01]	2.32	0.128
Children in house	0.78 [0.26 2.33]	0.20	0.653
ASQ Discomfort with Closeness	0.97 [0.91 1.03]	1.06	0.302
ASQ Need for Approval	1.04 [0.97 1.12]	1.19	0.275
ASQ Preoccupation for Relationships	1.02 [0.96 1.08]	0.36	0.551
PID-5-BF Negative Affect	1.14 [0.96 1.35]	2.21	0.137
PID-5-BF Detachment	1.16 [0.98 1.37]	2.83	0.093
PID-5-BF Psychoticism	0.93 [0.78 1.11]	0.59	0.442
DASS-21 Stress			
Gender	1.85 [0.83 4.14]	2.32	0.135
ASQ Discomfort with Closeness	0.97 [0.92 1.03]	1.05	0.305
ASQ Need for Approval	1.02 [0.97 1.09]	0.64	0.425
ASQ Preoccupation with Relationships	1.04 [0.99 1.10]	2.03	0.154
PID-5-BF Negative Affect	1.17 [1.01 1.36]	4.40	0.036
PID-5-BF Detachment	1.14 [0.98 1.32]	2.76	0.097
PID-5-BF Antagonism	0.96 [0.83 1.12]	0.25	0.619
PID-5-BF Disinhibition	0.96 [0.84 1.09]	0.42	0.518
PID-5-BF Psychoticism	1.02 [0.86 1.21]	0.08	0.782

Significant results in **bold**. Abbreviations: OR = odds ratio; CI = confidence interval; *p* = statistical significance; ASQ = Attachment Style Questionnaire; PID-5-BF = Personality Inventory for DSM-5–Brief Form–Adult.

4. Discussion

The present study aimed at investigating the psychological effects of the COVID-19 pandemic on HPs, considering the role of sociodemographic factors, attachment style, and personality dysfunction. The main findings can be summarized as follows: higher stress was associated with negative affect; higher anxiety was associated with female gender; higher depression was associated with detachment and preoccupation with relationships; and higher psychological distress was associated with having an infected loved one and the personality dimension of detachment. In line with the results reported in previous studies [2,33], the present findings underline that higher stress levels are associated with the personality dimension of negative affect. Specifically, higher levels of perceived threat related to the COVID-19 outbreak and low levels of perceived efficacy related to higher levels of stress in participants with strong negative affectivity [34].

The present study also provided empirical support for the association between female gender and anxiety. According to the literature, women tend to be more susceptible to experiencing anxiety, stress, and post-traumatic stress symptoms, relative to men [35]. COVID-19-related studies also found this association in the general population, highlighting that the pandemic tends to have a greater effect, in terms of anxiety, on women [36–38]. Furthermore, the present finding is consistent with the results of previous COVID-19-related studies showing an association, in healthcare workers, between female gender and increased risk for anxiety; as well as increased risk for depression and stress in female healthcare professionals and, specifically, frontline nurses (see [39,40] for systematic reviews).

The present finding of an association between depression and the personality dimension of detachment is in line with the literature [2,41]. It is also not surprising, considering that the PID-5-BF conceptualizes detachment as depressive affect and interpersonal withdrawal, and the trait has been found to be a good index of internalizing psychopathology [42,43]. A recent study [44] found similar results, highlighting that the pathological personality dimensions of negative affectivity and detachment were relevant predictors of clinically significant emotional problems in a sample of Italian community-dwelling adults.

The finding of an association between depression and preoccupation with relationships is also consistent with previous research indicating a link—in both non-clinical and

clinical samples—between insecure attachment styles and affective disorders, such as depression [45–49].

The present study found psychological distress, as measured by the DASS-12 total score, to be associated with detachment and having an infected loved one. These results suggest that having a relative or close friend infected with COVID-19 is significantly associated with higher levels of psychological distress. This result is consistent with Dong et al.'s [50] finding that having a friend or close relative infected with COVID-19 was the only relative factor contributing to a high Huaxi Emotional-Distress Index (HEI) score. The result is also consistent with the literature on previous epidemics, such as SARS [51]. Finally, the association between detachment and psychological distress is consistent with the results of previous studies finding that internalizing maladaptive personality traits (i.e., detachment, negative affectivity, psychoticism) are strongly associated with psychological distress [52], and that higher levels of detachment and negative affectivity are associated with higher levels of psychological distress. Indeed, internalizing traits might influence subjective sensitivity in the experience of psychological distress. The role of pathological personality domains in individuals' psychological reactions to COVID-19 has been further examined in a recent research study [53], which confirmed their association with negative mental health outcomes during the current pandemic.

Nevertheless, the present study has some limitations, and the results should be interpreted with caution. First, the sample mainly comprised women, thereby reducing the generalizability of the results to women. Second, the survey measure was implemented via the Internet and relied on voluntary sampling and self-reported data. Third, this study used a cross-sectional design, and therefore, it cannot be used to infer causality. A further limitation is that results were not stratified in relation to the different professions of HPs or in relation to being a frontline worker or a general health professional practitioner. Future research should seek to compare the present study data with data collected using other methods (e.g., semi-structured interviews, qualitative approaches). Finally, given the recent resurgence of COVID-19 in the Italian territory [54], it would be useful to conduct further research to identify potential further changes to the psychological wellbeing of HPs at this time, and to guide the development of tailored psychological and psychosocial interventions.

5. Conclusions

The aim of the present study was to investigate the psychological effects of the COVID-19 pandemic on HPs, and to assess the role of sociodemographic factors, attachment style, and personality dysfunction.

The pandemic puts an enormous strain on the healthcare system, and HPs must face new challenges (e.g., the constant exposure to COVID-19 patients and the increased workload). One of the contributions of this article is highlighting that the pandemic is taking a toll on the Italian healthcare workforce's mental health. The present results, in fact, suggest that HPs are experiencing high rates of psychological distress—in terms of depression, anxiety, and stress—during the COVID-19 pandemic. Other studies in the Italian context [55,56] also highlighted the need to address this issue, suggesting the implementation of psychoeducational interventions, with the aim to provide support and training for HPs and help them to respond emotionally and psychologically to the COVID-19 pandemic. A further contribution of our research is suggesting that specific factors (i.e., attachment style, personality traits, sociodemographic factors) may be useful in identifying HPs at greatest risk for developing mental health symptoms. Specifically, detachment and preoccupation with relationships were found to be associated with higher levels of depression; having an infected loved one and detachment were found to be associated with higher levels of psychological distress; and being female and negative affect were found to be associated with higher levels of anxiety and stress, respectively.

Taken together, these findings highlight the need to develop tailored psychological interventions towards vulnerable individuals among the HPs, considering possible risk factors at the individual level.

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/su13094992/s1>, Table S1: Mean and Standard Deviation of DASS-21, ASQ, and PID-5-BF scores, Table S2: DASS-21 Classification Levels.

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