

## CARING ADVANCED CANCER PATIENTS AT HOME DURING COVID-19 OUTBREAK: BURNOUT AND PSYCHOLOGICAL MORBIDITY AMONG PALLIATIVE CARE PROFESSIONALS IN ITALY

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**CARING ADVANCED CANCER PATIENTS AT HOME DURING COVID-19 OUTBREAK:  
BURNOUT AND PSYCHOLOGICAL MORBIDITY AMONG PALLIATIVE CARE PROFESSIONALS IN ITALY**

***Burnout and palliative care during Covid-19 in Italy***

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## Abstract

**Objective.** Providing palliative care (PC) at home for advanced cancer patients has become essential during the Covid-19 emergency. Nevertheless, the home PC professionals (PCPs) faced a challenging situation due to increased number of discharged patients, reduced availability of healthcare facilities and physical/relational barriers between them and patients. This study aimed to investigate the impact of Covid-19 pandemic on burnout and psychological morbidity among home PCPs in Italy.

**Methods.** One hundred and ninety-eighth PC physicians and nurses working in home assistance in Italy were invited to participate. The results obtained by the investigation conducted during the Covid-19 emergency (COVID2020) were compared with data collected in 2016 in the same setting (BURNOUT2016). The questionnaires (socio-demographics, Maslach Burnout Inventory and General Health Questionnaire-12) were the same for both the surveys. The PCPs participating in COVID2020 survey (n=145) were mostly the same (70%) who participated to the BURNOUT2016 study (n=179).

**Results.** One hundred and forty-five PCPs participated in the study (response rate 73.2%). During the Covid-19 emergency, home PCPs presented a lower burnout frequency ( $p<.001$ ) and higher level of personal accomplishment than in 2016 ( $p=.047$ ). Conversely, the risk for psychological morbidity was significantly higher during the pandemic ( $p<.001$ ).

**Conclusions.** In the age of Covid-19, the awareness of being at the forefront of containing the pandemic along with the sense of responsibility toward their high-risk patients may arouse PCPs psychological distress, but, on the other hand, this condition may improve their sense of professional satisfaction and personal accomplishment.

## Keywords

Cancer, Covid-19, Palliative Care, Pandemics, Psychological Burnout, Psychological Distress

## Key message

This article investigate burnout and psychological morbidity among Italian palliative care professionals (PCPs) during the Covid-19 pandemic. Results indicate being at the forefront of containing the pandemic may arouse PCPs psychological distress, but, on the other hand, this condition may improve their sense of professional satisfaction and personal accomplishment.

## 1 Introduction

2 Covid-19, caused by novel coronavirus Severe Acute Respiratory Syndrome-Coronavirus-2 (Sars-Cov-2),  
3 emerged in Wuhan, China, in December 2019. On March 11<sup>th</sup>, it was declared a pandemic by the World Health  
4 Organization (1). The Italian outbreak began on February 21<sup>st</sup> in the Lombardy region (northern Italy) and rapidly  
5 diffused across the country, tragically overwhelming the National Health Care System capacity.(2,3)

6 During the pandemic, home supportive and palliative care (PC) for advanced cancer patients have been even  
7 more essential to limit the extent of the disease, reducing admissions to hospitals, maintaining symptom control  
8 and ensuring psychological support for patients and family(4). No less significant, PC professionals (PCPs) used  
9 their communication skills to talk appropriately with patients and their family, where the fear and the anxiety due  
10 to this period might worsen symptoms (5).

11 With the spread of the pandemic and the lockdown in Italy, home PCPs had to face with a challenging situation  
12 due to increased number of discharged patients and, at the same time, reduced availability of healthcare facilities  
13 (6–8). In addition, the poor knowledge about the virus, the lack of personal protective equipment and the  
14 procedures to reduce the risk of infection have created physical and relational barriers between PCPs and  
15 patients (9,10). Consequently, the PCP's daily work routine became slower, more complex and more demanding.  
16 Anxiety, overwork and isolation can cause worrying consequences that negatively impact on their physical and  
17 psychological wellbeing, leading to burnout syndrome and other mental health concerns (11). Stressful events  
18 might otherwise result in individual growth, involving individual resources and fostering personal accomplishment.  
19 Burnout syndrome is defined as a state of mental and/or physical exhaustion caused by prolonged exposure to  
20 excessive and prolonged work-related stress and has become a relevant and widely described psychosocial  
21 problem among PCPs (12–15). Burnout in health care professionals has been frequently associated to  
22 psychological morbidity, a dimension that may early indicate the onset of major depressive, anxiety and  
23 somatization disorders (12,15–17).

24 The aim of the present study was to investigate the impact of Covid-19 pandemic on burnout and psychological  
25 morbidity in home PCPs in Italy. Physicians and nurses working in PC setting from high and low impact areas of  
26 Covid-19 infections were enrolled in this survey to provide a comprehensive picture of the Italian situation. To  
27 describe the variation due to the Covid-19 emergency, we have compared these results with an our previous  
28 survey (14), carried out four years ago on a similar sample of PCPs.

## 30 Methods

### 31 Study design and sample

32 The participants were PCPs (physicians and nurses) working for the National Tumor Assistance (ANT) in 11  
33 Italian regions. ANT is a non-profit organization, which has been providing since 1978 free of charge specialized  
34 PC at home to advanced cancer patients. The results obtained by the investigation conducted on the PCPs  
35 during the Covid-19 emergency (COVID2020) have been compared with data collected on the PCPs working in  
36 the same organization in 2016 (BURNOUT2016) and partially published in 2019 (14). The questionnaires were  
37 the same for both the studies. Based on the changes in the composition of the ANT staff during the last four

years, we can assume that the PCPs participating in COVID2020 survey were mostly the same (70%) who participated to the BURNOUT2016 study. No specific exclusion criteria were set, with the exception of the PCPs who declined participation. The research was carried out in full accordance with the Declaration of Helsinki and the Good Clinical Practice. Participants provided the informed consent for participation to the investigation, data analysis, and publication.

COVID2020. The survey was conducted during the phase II of the lockdown for the Covid-19 outbreak in Italy and data were collected from May 11<sup>th</sup> to June 2<sup>nd</sup>, 2020. All the PCPs (n=198) working in ANT were invited to participate by an email explaining the aim and the method of the research and reporting the link to the questionnaires. The data were anonymously collected on a web-based platform (www.surveymonkey.com) and the answers were analyzed using the SurveyMonkey analyzing tool. The investigation was approved by the Ethical Committee of the Central Area of Emilia Romagna (619-2020-OSS-AUSLBO).

BURNOUT2016 (14). The survey was performed between May and June 2016. All the PCPs working in ANT (n=212) were invited to participate by the ANT psychologists during the ordinary meetings of the teams. The data were anonymously collected on paper questionnaires. The investigation was approved by the Ethical Committee Interaziendale Bologna-Imola-CE-BI (16028; Prot. N.504/CE).

#### Measures

*Socio-demographic and professionals data.* Data about gender, age, marital status, offspring, profession, years of experience in PC and geographical area of work were collected.

*Maslach Burnout Inventory* (18). Burnout was measured by the Italian version of the Maslach Burnout Inventory (MBI). The questionnaire consists of 22 items investigating different aspects of burnout syndrome ascribable to 3 specific dimensions: emotional exhaustion (EE, 9 items), depersonalization (DP, 5 items) and personal accomplishment (PA, 8 items). EE refers to an excessive emotional engagement that leads to a feeling of draining and to a loss of personal resources and energy, DP describes a negative attitude of detachment from work and patients, a low level of PA is defined as a sense of failure and incompetence and is characterized by a decrease in own desire of success. The answers are graded on a 7-point scale from 0 (never) to 6 (everyday). The results of the MBI were analysed according 3 different methods: i) the score obtained in each subscale was considered as continuous variable (*i.e.* mean score); ii) the frequency of PCPs showing burnout symptoms as high level for EE and DP and low level of PA was assessed according the cut off (EE $\geq$ 24, DP $\geq$ 9, PA $\leq$ 29) reported by the Italian Maslach Manual (19); iii) the frequency of PCPs showing burnout was defined as high level of EE (>27) and/or high level of DP (>10). The frequency of PCPs with a low sense of PA (<31) was separately considered (20). The latter is the most commonly used method (21).

*General Health Questionnaire - 12 items* (22,23). General Health Questionnaire 12 (GHQ-12) is a self-report questionnaire whose aim is to identify the risk of developing psychological morbidity in general population. Items are rated on 4-point Likert scale from 0 to 3. The results of GHQ-12 were analysed both as a continuous variable (*i.e.* mean total score) and as a dichotomous variable considering the PCPs with a total score higher than 19 as showing psychological morbidity.

#### Statistical methods

According the normality test Shapiro–Wilk, the scores obtained from the MBI and GHQ-12 questionnaires were not normally distributed, thus non-parametric tests were applied. The comparison of the MBI subscale scores and GHQ-12 total score between PCPs participating to the two studies was analysed by Mann-Whitney U Test, the distribution of PCPs showing burnout symptoms (MBI) and psychological morbidity (GHQ-12) as well as the overlap between the two conditions were compared between the studies by Chi Square test.

The potential predictors [socio-demographics (marital status, offspring); professional data (profession, years of experience in palliative care and geographical area of work); psychological morbidity (GHQ-12 score)] for burnout symptoms (EE, DP and PA subscale scores) were investigated by linear regression models adjusted for age and gender. The p-values of the association analysis were adjusted by the Benjamini-Hockberg correction for multiple testing with a false discovery rate of .05.

The significance threshold was set at .05. Statistical analysis were executed by the English version of SPSS 25 for Windows.

## Results

The present study considered the sample of PCPs responding to the BURNOUT2016 survey (179 out of 212 PCPs, response rate 84.4%) and the sample of PCPs responding to the COVID2020 survey (145 out of 198, response rate 73.2%). All the participants has been working in the home PC program for advanced cancer patients over the Italian territory.

Table 1 presents a summary of the demographic and professional characteristics of the enrolled PCPs. The BURNOUT2016 sample consisted of 104 physicians (58%) and 75 nurses (42%) while the COVID2020 sample included 77 physicians (53%) and 68 nurses (47%). For both the surveys, most of the participants were female (67% and 68%, respectively), married or cohabitant (65% and 53%, respectively), with children (55% and 52%, respectively) and the average age was 42 years. The distribution according the experience in palliative care and the geographical area of work is quite similar between the participants of BURNOUT2016 and COVID2020 surveys (table 1).

Table 2 showed the comparison of the level of burnout of the PCPs between the two studies according three different methods. i) Considering the MBI subscale scores as continuous variables, the PCPs of COVID2020 showed lower level of DP ( $p<.001$ ) and higher level of PA ( $p<.001$ ) compared to BURNOUT2016. These results were confirmed also dividing physicians and nurses ( $p<.001$  for both professions). ii) Analysing the frequency of burnout according the cut off from the Italian Maslach Manual (19), PCPs showing burnout symptoms on DP and PA dimension were less numerous in COVID2020 compared to the BURNOUT2016 (for DP: 26% vs. 65.9%,  $p<.001$ ; for PA 11.9% vs. 22.3%,  $p=.018$ ). The lower frequency of DP in COVID2020 study was confirmed also considering physicians and nurses separately ( $p<.001$  for both professions). iii) According the definition criteria described by Shanafelt et al. (20), 31 PCPs (22.0%) participating to COVID2020 showed burnout compared to the 82 PCPs involved in BURNOUT2016 (45.8%) ( $p<.001$ ). The separate analysis of physicians and nurses confirmed the lower burnout frequency in the COVID2020 compared to the BURNOUT2016 ( $p<.001$  for

physicians,  $p=.008$  for nurses). The frequency of PCPs with a low sense of PA was lower in COVID2020 (25 PCPs, 17.2%) compared to BURNOUT2016 (48 PCPs, 26.8%) ( $p=.047$ ).

Table 3 reported the evaluation of psychological morbidity of the PCPs participating to the two surveys. Analysing the GHQ-12 score as a continuous variable, psychological morbidity was significantly higher in PCPs of the COVID2020 compared to BURNOUT2016 ( $p<.001$ ) and this result was confirmed considering physicians and nurses separately ( $p=.004$  for physicians and  $p<.001$  for nurses). Sixty-eight PCPs (45.1%) participating to COVID2020 showed psychological morbidity compared to the 28 PCPs (15.6%) of BURNOUT2016 ( $p<.001$ ). The higher frequency of psychological morbidity among COVID2020 participants was confirmed by the separate analysis of physicians and nurses ( $p<.001$  for both professions).

The linear regression models failed to identify potential predictors of burnout among the socio-demographic and professional variables (age, gender, marital status, offspring, profession, years of experience in palliative care, geographical area of work) both for COVID2020 and BURNOUT2016 surveys (data not shown).

Table 4 displayed the linear regression models showing the association between psychological morbidity (GHQ-12 score) and burnout dimensions (EE, DP and PA subscale scores) adjusted for age and gender in PCPs participating to COVID2020 and BURNOUT2016 studies. The level of psychological morbidity was significantly associated with the burnout dimensions in both the surveys with very similar coefficient (for EE:  $\beta$  coeff. = .403,  $p<.001$  in BURNOUT2016 and  $\beta$  coeff. = .417,  $p<.001$  in COVID2020; for DP:  $\beta$  coeff. = .372,  $p<.001$  in BURNOUT2016 and  $\beta$  coeff. = .253,  $p<.001$  in COVID2020; for PA:  $\beta$  coeff. = -.206,  $p=.006$  in BURNOUT2016 and  $\beta$  coeff. = -.219,  $p=.009$  in COVID2020). Among COVID2020 participants, 23 out of the 31 PCPs (74.2%) showing burnout displayed also psychological morbidity while in the BURNOUT2016 study this percentage was significantly lower [19 out of 82 PCPs (23.2%) showed both burnout and psychological morbidity] ( $p<.001$ ). Among COVID2020 participants, all the PCPs with EE ( $n=12$ ) showed psychological morbidity while in the BURNOUT2016 study only 8 out of the 20 (20%) PCPs with EE showed also psychological morbidity ( $p<.001$ ).

## Discussion

Until now, very few studies have explored the psychological status of PCPs during Covid-19 pandemic (21) and no studies have compared the burnout level during the age of Covid-19 with the psychological conditions of PC staff in a period before the pandemic. The available literature reported a lower burnout levels for PCPs than for other medical discipline (12,24–27). Two recent studies (21,28) reported a burnout frequency among PCPs of about 38%, while the prevalence of burnout widely ranged in the previous literature, based on work context, characteristics of the health care professionals and coping strategies (13–15). In their study, Koh et al. (32) found a higher risk of burnout (36.9%) for PCPs worked in home care setting compared to other setting (hospice or hospital). In a health emergency situation, the psychological stress level of health workers is expected to increase, thus facilitating the onset of burnout and other distress-related syndromes (11,29). During COVID-19 pandemic, healthcare workers have faced many difficulties such as the risk of infection, excessive workload, relationship constraints and lack of medical guidelines and available protocols (30–32).



1 Considering that the data about the burnout prevalence in PC are not univocal and strictly dependent on different  
 2 settings, inferring the burden of the pandemic on the PCPs psychological status results a very demanding  
 3 challenge. For this reason, the present study for the first time aimed to compare burnout level during Covid-19  
 4 emergency with MBI scores of a similar sample collected four years ago (14) in the same home PC service.

5 Surprisingly, providing home PC in the age of Covid-19 seemed to lead to a lower burnout level as compared to  
 6 prior to the pandemic. In particular, the DP score was significantly lower during outbreak than four years ago.  
 7 Consistently, PA score was higher in the sample forced to face the Covid-19. Similar unexpected findings have  
 8 been recently attained in a study where the most of healthcare professionals interviewed strongly disagree that  
 9 they feel more burnout during Covid-19 then before the outbreak (33).

10 On the contrary, psychological morbidity, as measured by the GHQ-12 questionnaire, was worse during the  
 11 pandemic than in routine work under standard conditions. Psychological morbidity was significantly associated  
 12 with the three dimensions of burnout, confirming data from previous studies (12,16,17,34).

13 In the COVID2020 survey, we found a strong overlap between burnout, particularly for the EE dimension, and  
 14 psychological morbidity.

15 Some considerations may explain the results of this study. During the pandemic, the frequency of burnout  
 16 decreased and we can suppose that the crucial social role played by PCPs could have fostered their professional  
 17 satisfaction. On the other hand, the few cases of burnout among PCPs facing with the Covid-19 showed also  
 18 psychological morbidity, and this finding could be ascribed mainly to individual factors of emotional distress.  
 19 Accordingly, our data have shown that during the global crisis, PCPs have maintained their capacity to find  
 20 gratification from their work and they have increased their sense of vocation promoting greater professional  
 21 fulfilment.(35,36) In particular, recent studies reported a key role of PC in pandemics both for previously healthy  
 22 people who had been severely infected by the virus and for patients with preceding life-threatening conditions  
 23 (4,32,37). PC is critical for improving symptom control, facilitating triage and difficult decision making, advancing  
 24 communication with patients and families (4). In order to guarantee, during the pandemic, the care of the  
 25 seriously ill patients, many studies highlighted the particular need to enhance PC at home to prevent  
 26 hospitalizations and to ensure continuity of care (32,38,39). Due to their fragile condition, cancer patients have to  
 27 receive an over-protection from the risk of contracting Covid-19, both to guarantee their safety and to avoid  
 28 additional burden of the health system (6).

29 In this scenario, PCPs enrolled in our study may have felt at the forefront of containing the pandemic and keeping  
 30 safe the vulnerable patients they care (33). The awareness of being responsible for the safety of such high-risk  
 31 patients may, on the one hand, had arouse PCPs concerns and stress, but on the other hand, could have  
 32 strength their sense of professional satisfaction and personal accomplishment. We can assume that in such a  
 33 situation they may have felt more emotionally close and involved with their patients, who had become even more  
 34 frail, isolated and suffering for the pandemic (37).

35 Covid-19 pandemic increased PCPs distress due to work overload, fear of contagion, difficulty in delivering effective PC  
 36 despite isolation and necessary barrier precautions (30,31,40). On the other hand, the PCPs, playing a strategic role in the  
 37 management of the health emergency, may acquire a pride that prevents depersonalization and overcome the risk of



burnout. It is possible that psychological distress might happen earlier and lead later to burnout. More research with longitudinal follow up might be needed in future studies. When the emergency will be over, a further survey will be necessary to give a complete and exhaustive view of the long-term consequences of the Covid-19 pandemic on the PC professionals. Our results highlighted the importance of acknowledging the key role of PC within the public health system, especially in an emergency context such as pandemics (4,32,37,41). Nowadays it became evident that PC competence and skills, such as symptom control, psychological support for patients and families, breaking bad news and end-of-life decision making are essential in the public health context and not only in PC setting (8). Working on a deeper PC integration in a broader community healthcare context could improve PCPs personal accomplishment and professional satisfaction (42–47).

There is a wide literature on the relationship between healthcare professionals' psychological health and quality of care (48–51). Depersonalization, intended as an attitude of emotional disengagement from one's work, could increase the risk of medical errors and render difficult the adaptivity to change (48,52). Other studies reported an association between burnout and worst indicators of patient safety increasing the risk of adverse events (20,48,53–55). On the contrary, a greater personal accomplishment makes PCPs feeling more self-efficacious in coping with patients' needs, encouraging them to take in charge challenging clinical tasks (48). Although the majority of evidence suggested a negative impact of burnout on the professional performance, the available literature did not provide clear evidence on the relationship between specific burnout dimensions and quality of care outcomes (49,56,57). Starting from these observations, it could be interesting to investigate if home PCPs may have provided a similar, or even better, quality of care during Covid-19 pandemic than in non-emergency situations.

During the pandemic the home PC organization did not improve the psychological support for the PCPs. The ordinary measures of support, like the monthly supervision with an external expert psychologist and multidisciplinary weekly staff e-meeting with cases discussions, have been maintained during emergency period. A systematic regular monitoring of burnout and psychological morbidity among the PC staff could become a suitable strategy to early identify signal of distress and to develop additional intervention aimed at the maintenance of the PCPs wellbeing. Further studies should be devoted to this issue.

### **Study limitation**

Our study has a number of limitations. This study is designed to describe the variation due to the Covid-19 emergency in the burnout frequency and psychological status of PCPs working at home in Italy. To this aim, the data obtained during a "normal" period of work have been used as reference. The PCPs participating in COVID2020 survey were mostly the same who participated to the BURNOUT2016 study but it is worth noting that the composition of the ANT staff has undergone some inevitable changes in the last four years, especially concerning the nursing team. Regarding the physician staff, which has remained more stable, four more years of age and experience in home PC must be considered. It is also possible that improvement in other aspects of the working conditions might have resulted in the observed improvement in burnout rate. In addition, due to the emergency period, the data collection methods of the two surveys were different: in the BURNOUT2016 the

questionnaires were filled on paper forms while in the COVID2020 survey the data were collected through an online platform. In both cases, the interviews were anonymous rendering impossible the execution of a paired data analysis.

## Conclusion

The frequency of burnout among PCPs during the pandemic was significantly lower than 4 years before while the severity of psychological distress was significantly worse. More research is needed to better characterize the impact of pandemics on health care professionals.

## Disclosures

The authors declare that they have no conflicts of interest.

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## Tables

**Table 1.** Socio-demographic and professionals characteristics of PCPs working in ANT Foundation participating to BURNOUT2016 and COVID2020 surveys.

<b>Study</b>	<b>BURNOUT2016</b>	<b>COVID2020</b>	<b>BURNOUT2016</b>	<b>COVID2020</b>	<b>BURNOUT2016</b>	<b>COVID2020</b>
<b>Profession</b>	<b>PCPs, n=179</b>	<b>PCPs, n=145</b>	<b>Physicians, n=104</b>	<b>Physicians, n=77</b>	<b>Nurses, n=75</b>	<b>Nurses, n=68</b>
<b>Gender</b>						
Men	59 (33%)	47 (32%)	38 (36%)	28 (36%)	21 (28%)	19 (28%)
Women	120 (67%)	98 (68%)	66 (64%)	49 (64%)	54 (72%)	49 (72%)
<b>Age, mean (<math>\pm</math>St.Dev)</b>	42 ( $\pm$ 11)	42 ( $\pm$ 12)	45 ( $\pm$ 10)	48 ( $\pm$ 10)	37 ( $\pm$ 11)	36 ( $\pm$ 10)
<b>Marital status</b>						
Unmarried	50 (28%)	59 (41%)	20 (19%)	19 (25%)	30 (40%)	40 (59%)
Married/cohabitant	117 (65%)	77 (53%)	77 (74%)	51 (66%)	40 (53%)	26 (38%)
Separated/divorced	10 (6%)	9 (6%)	6 (6%)	7 (9%)	4 (5%)	2 (3%)
Widowed	2 (1%)	-	1 (1%)	-	1 (1%)	-
<b>With children</b>						
Yes	98 (55%)	75 (52%)	62 (60%)	48 (62%)	36 (48%)	27 (40%)
No	81 (45%)	70 (48%)	42 (40%)	29 (38%)	39 (52%)	41 (60%)
<b>Years of work in palliative care</b>						
<2 years	49 (27%)	27 (19%)	25 (24%)	10 (13%)	24 (32%)	17 (25%)
2-5 years	47 (26%)	40 (28%)	22 (21%)	18 (23%)	25 (33%)	22 (32%)
6-10 years	27 (15%)	23 (16%)	16 (15%)	11 (14%)	11 (15%)	12 (18%)
>10 years	56 (31%)	55 (38%)	41 (39%)	38 (49%)	15 (20%)	17 (25%)
<b>Geographical area of work†</b>						
Northern Italy	70 (39%)	49 (34%)	41 (39%)	28 (36%)	29 (39%)	21 (31%)
Central Italy	32 (18%)	32 (22%)	21 (20%)	17 (22%)	11 (15%)	15 (22%)
Southern Italy	77 (43%)	64 (44%)	42 (40%)	32 (42%)	35 (47%)	32 (47%)

†Northern Italy (Emilia-Romagna and Lombardia); Central Italy (Tuscany, Umbria, Marche, Lazio); Southern Italy (Campania, Basilicata and Puglia).

**Table 2.** MBI subscale scores and frequency of burnout among PCPs working in ANT Foundation participating to BURNOUT2016 and COVID2020 surveys.

Study	BURNOUT2016	COVID2020		BURNOUT2016	COVID2020		BURNOUT2016	COVID2020	
Profession	PCPs, n=179	PCPs, n=145		Physicians, n=104	Physicians, n=75		Nurses, n=75	Nurses, n=68	
<b>MBI subscale scores, mean (<math>\pm</math> St.Dev.)</b>			<b>p<sup>†</sup></b>			<b>p<sup>†</sup></b>			<b>p<sup>†</sup></b>
Emotional exhaustion (EE)	13.7 ( $\pm$ 8.1)	12.7 ( $\pm$ 7.2)	.200	14.5 ( $\pm$ 8.7)	13.3 ( $\pm$ 7.6)	.470	12.7 ( $\pm$ 7.0)	11.8 ( $\pm$ 6.5)	.306
Depersonalization (DP)	10.2 ( $\pm$ 4.5)	7.1 ( $\pm$ 4.6)	<.001	10.4 ( $\pm$ 4.7)	7.0 ( $\pm$ 4.6)	<.001	9.9 ( $\pm$ 4.2)	7.1 ( $\pm$ 4.7)	<.001
Personal accomplishment (PA)	33.3 ( $\pm$ 5.5)	36.4 ( $\pm$ 6.1)	<.001	33.2 ( $\pm$ 5.3)	36.5 ( $\pm$ 6.2)	<.001	33.4 ( $\pm$ 5.7)	36.4 ( $\pm$ 6.1)	<.001
<b>PCPs showing burnout symptoms, n (%)</b>			<b>p<sup>‡</sup></b>			<b>p<sup>‡</sup></b>			<b>p<sup>‡</sup></b>
High level of EE ( $\geq$ 24)	20 (11.2%)	12 (8.4%)	.407	15 (14.4%)	7 (9.2%)	.360	5 (6.7%)	5 (7.5%)	.853
High level of DP ( $\geq$ 9)	118 (65.9%)	37 (26.1%)	<.001	69 (66.3%)	15 (19.5%)	<.001	49 (65.3%)	22 (33.8%)	<.001
Low level of PA ( $\leq$ 29)	40 (22.3%)	17 (11.9%)	.018	20 (19.2%)	8 (10.5%)	.145	20 (26.7%)	9 (13.4%)	.062
<b>PCPs showing burnout, n (%)<sup>¶</sup></b>			<b>p<sup>‡</sup></b>			<b>p<sup>‡</sup></b>			<b>p<sup>‡</sup></b>
EE > 27 and/or DP > 10	82 (45.8%)	31 (22.0%)	<.001	46 (44.2%)	14 (18.4%)	<.001	36 (48.0%)	17 (26.2%)	.008
Low level of PA (<31)	48 (26.8%)	25 (17.2%)	.047	25 (24%)	12 (15.6%)	.176	23 (30.7%)	13 (19.1%)	.124

<sup>†</sup>Statistical analysis compared the MBI subscale scores between PCPs participating to the two studies by Mann-Whitney *U* Test; <sup>‡</sup>Statistical analysis compared the distribution of PCPs showing burnout symptoms between PCPs participating to the two studies by Chi Square test. <sup>§</sup>cut off from the Italian Maslach manual by Sirigatti and Stefanile, 1993(19); <sup>¶</sup>criteria used by Shanafelt et al., 2012(20).

**Table 3.** GHQ-12 score and frequency of psychological morbidity among PCPs working in ANT Foundation participating to BURNOUT2016 and COVID2020 surveys.

Study	BURNOUT2016			COVID2020			BURNOUT2016			COVID2020		
	PCPs, n=179	PCPs, n=145	p	Physicians, n=104	Physicians, n=75	p	Nurses, n=75	Nurses, n=68	p	Nurses, n=75	Nurses, n=68	p
<b>GHQ-12 score, mean (<math>\pm</math>St.Dev.)</b>	15.9 ( $\pm$ 3.9)	18.2 ( $\pm$ 4.5)	<.001 <sup>†</sup>	16.4 ( $\pm$ 3.7)	18.2 ( $\pm$ 4.9)	.004 <sup>†</sup>	15.1 ( $\pm$ 3.9)	18.3 ( $\pm$ 4.1)	<.001 <sup>†</sup>	15.1 ( $\pm$ 3.9)	18.3 ( $\pm$ 4.1)	<.001 <sup>†</sup>
<b>PCPs showing psychological morbidity, n (%)</b>	28 (15.6%)	64 (45.1%)	<.001 <sup>‡</sup>	19 (18.3)	34 (45.9%)	<.001 <sup>‡</sup>	9 (12.0%)	30 (45.9%)	<.001 <sup>‡</sup>	9 (12.0%)	30 (45.9%)	<.001 <sup>‡</sup>

<sup>†</sup>Statistical analysis compared the GHQ-12 score between PCPs participating to the two studies by Mann-Whitney *U* Test; <sup>‡</sup>Statistical analysis compared the distribution of PCPs showing psychological morbidity (GHQ-12 score>19) between PCPs participating to the two studies by Chi Square test.

**Table 4.** Linear regression models showing the association between psychological morbidity (GHQ-12 score, independent variable) and burnout dimensions (EE, DP and PA subscale scores, dependent variables) adjusted for age and gender in PCPs participating to BURNOUT2016 and COVID2020 surveys.

MBI dimension	BURNOUT2016		COVID2020	
	$\beta$ coeff. (95% C.I.)	p	$\beta$ coeff. (95% C.I.)	p
EE	.403 (.550 / 1.125)	<.001	.417 (.4200 / .902)	<.001
DP	.372 (.267 / .593)	<.001	.253 (.095 / .428)	<.001
PA	-.206 (-.499 / -.083)	.006	-.219 (-.522 / -.077)	.009