Journal Pre-proof

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

Silvia Varani, PSYD, Rita Ostan, PhD, Luca Franchini, PSYD, Giacomo Ercolani, PSYD, Raffaella Pannuti, MSc, Guido Biasco, MD, Eduardo Bruera, MD

PII: S0885-3924(20)30896-4

DOI: https://doi.org/10.1016/j.jpainsymman.2020.11.026

Reference: JPS 10737

To appear in: *Journal of Pain and Symptom Management*

Received Date: 14 October 2020

Revised Date: 19 November 2020

Accepted Date: 20 November 2020

Please cite this article as: Varani S, Ostan R, Franchini L, Ercolani G, Pannuti R, Biasco G, Bruera E, CARING ADVANCED CANCER PATIENTS AT HOME DURING COVID-19 OUTBREAK: BURNOUT AND PSYCHOLOGICAL MORBIDITY AMONG PALLIATIVE CARE PROFESSIONALS IN ITALY *Journal of Pain and Symptom Management* (2020), doi: https://doi.org/10.1016/j.jpainsymman.2020.11.026.

This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

© 2020 Published by Elsevier Inc. on behalf of American Academy of Hospice and Palliative Medicine

Journal Pre-proof

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

Silvia Varani[1],PSYD, Rita Ostan[1],PhD, Luca Franchini[1], PSYD, Giacomo Ercolani[1], PSYD, Raffaella Pannuti[1],MSc, , Guido Biasco[2*],MD, Eduardo Bruera[3*],MD

[1]National Tumor Assistance (ANT), Bologna, Italy

[2]University of Bologna & Academy of the Sciences of Palliative Medicine, Bologna, Italy

[3]Department of Palliative Care, Rehabilitation and Integrative Medicine, Huston, Texas

*senior co-autorship

Corresponding Author:

Silvia Varani

Training and Research Department - National Tumor Assistance (ANT)

Via Jacopo di Paolo, 36 – 40128 Bologna, Italy

silvia.varani@ant.it

List of numbers:

- Number of tables: 4
- Number of figures: 0
- Number of references: 57
- Number of words (excluded abstract and references): 3.338

Journal Pre-proof

Journal Pre-proof

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.

Journal Pre-proof

Introduction

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

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

With the spread of the pandemic and the lockdown in Italy, home PCPs had to face with a challenging situation due to increased number of discharged patients and, at the same time, reduced availability of healthcare facilities (6–8). In addition, the poor knowledge about the virus, the lack of personal protective equipment and the procedures to reduce the risk of infection have created physical and relational barriers between PCPs and patients (9,10). Consequently, the PCP's daily work routine became slower, more complex and more demanding. Anxiety, overwork and isolation can cause worrying consequences that negatively impact on their physical and psychological wellbeing, leading to burnout syndrome and other mental health concerns (11). Stressful events might otherwise result in individual growth, involving individual resources and fostering personal accomplishment.

Burnout syndrome is defined as a state of mental and/or physical exhaustion caused by prolonged exposure to excessive and prolonged work-related stress and has become a relevant and widely described psychosocial problem among PCPs (12–15). Burnout in health care professionals has been frequently associated to psychological morbidity, a dimension that may early indicate the onset of major depressive, anxiety and somatization disorders (12,15–17).

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

Methods

Study design and sample

The participants were PCPs (physicians and nurses) working for the National Tumor Assistance (ANT) in 11 Italian regions. ANT is a non-profit organization, which has been providing since 1978 free of charge specialized PC at home to advanced cancer patients. The results obtained by the investigation conducted on the PCPs during the Covid-19 emergency (COVID2020) have been compared with data collected on the PCPs working in the same organization in 2016 (BURNOUT2016) and partially published in 2019 (14). The questionnaires were 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 11th to June 2nd, 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.survio.com) and the answers were analyzed using the Survio 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≥24, DP≥9, PA≤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: β coeff. = .403, p<.001 in BURNOUT2016 and β coeff. = .417, p<.001 in COVID2020; for DP: β coeff. = .372, p<.001 in BURNOUT2016 and β coeff. = .253, p<.001 in COVID2020; for PA: β coeff. = -.206, p=.006 in BURNOUT2016 and β 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).

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

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

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

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

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

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

Covid-19 pandemic increased PCPs distress due to work overload, fear of contagion, difficulty in delivering effective PC despite isolation and necessary barrier precautions (30,31,40). On the other hand, the PCPs, playing a strategic role in the 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.

The authors received no financial support for the research, author-ship, and/or publication of this article.

References

1. General's opening remarks at the media briefing on COVID-19 [Internet]. World Health Organization. 2020 [cited 2020 May 1]. Available from: www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020
2. Coronavirus disease 2019 (COVID-19) Situation Report [Internet]. World Health Organization. 2020 [cited 2020 May 1]. Available from: www.who.int/docs/default-source/coronaviruse/situation-reports/20200501-covid-19-sitrep.pdf?sfvrsn=742f4a18_2
3. Confermato caso italiano: a Milano situazione simile a quella della Germania. Adottate le misure tra più restrittive previste in caso di focolaio epidemico. [Internet]. Istituto Superiore di Sanità. 2020 [cited 2020 May 1]. Available from: https://bit.ly/2VRVasN
4. Nouvet E, Sivaram M, Bezanson K, Krishnaraj G, Hunt M, de Laat S, et al. Palliative care in humanitarian crises: a review of the literature. J Int Humanit Action [Internet]. 2018 Dec 20;3(1):5. Available from: https://jhumanitarianaction.springeropen.com/articles/10.1186/s41018-018-0033-8
5. HOW TO COMMUNICATE WITH FAMILIES LIVING IN COMPLETE ISOLATION [Internet]. SIAARTI - Aniarti - SICP - SIMEU. 2020 [cited 2020 Apr 18]. Available from: https://www.aniarti.it/wp-content/uploads/2020/04/CommuniCoViD_eng-18apr20.pdf
6. Porzio G, Cortellini A, Bruera E, Verna L, Ravoni G, Peris F, et al. Home Care for Cancer Patients During COVID-19 Pandemic: The Double Triage Protocol. J Pain Symptom Manage [Internet]. 2020 Jul;60(1):e5–7. Available from: https://linkinghub.elsevier.com/retrieve/pii/S088539242030172X
7. Boccia S, Ricciardi W, Ioannidis JPA. What Other Countries Can Learn From Italy During the COVID-19 Pandemic. JAMA Intern Med [Internet]. 2020 Jul 1;180(7):927. Available from: https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2764369
8. Costantini M, Rabitti E, Beccaro M, Fusco F, Peruselli C, La Ciura P, et al. Validity, reliability and responsiveness to change of the Italian palliative care outcome scale: A multicenter study of advanced

cancer patients Cancer palliative care. BMC Palliat Care [Internet]. 2016;15(1):1–12. Available from: http://dx.doi.org/10.1186/s12904-016-0095-6

9. Indolfi C, Spaccarotella C. The Outbreak of COVID-19 in Italy. JACC Case Reports [Internet]. 2020 Jul;2(9):1414–8. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2666084920303296

10. Nacoti M, Ciocca A, Giupponi A, Brambillasca P, Lussana F, Pisano M, et al. At the Epicenter of the Covid-19 Pandemic and Humanitarian Crises in Italy: Changing Perspectives on Preparation and Mitigation. Catal Innov Care Deliv. 2020;March, 21.

11. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. Brain Behav Immun [Internet]. 2020;88:901–7. Available from: http://www.ncbi.nlm.nih.gov/pubmed/32437915

12. Dunwoodie DA, Auret K. Psychological morbidity and burnout in palliative care doctors in Western Australia. Intern Med J [Internet]. 2007 May 21;070521010100003-??? Available from: http://doi.wiley.com/10.1111/j.1445-5994.2007.01384.x

13. Martins Pereira S, Fonseca AM, Sofia Carvalho A. Burnout in palliative care: A systematic review. Nurs Ethics [Internet]. 2011 May 9;18(3):317–26. Available from: http://journals.sagepub.com/doi/10.1177/0969733011398092

14. Ercolani G, Varani S, Peghetti B, Franchini L, Malerba MB, Messana R, et al. Burnout in Home Palliative Care: What Is the Role of Coping Strategies? J Palliat Care [Internet]. 2020 Jan 6;35(1):46–52. Available from: https://doi.org/10.1177/0825859719827591

15. Koh MYH, Chong PH, Neo PSH, Ong YJ, Yong WC, Ong WY, et al. Burnout, psychological morbidity and use of coping mechanisms among palliative care practitioners: A multi-centre cross-sectional study. Palliat Med [Internet]. 2015 Jul 31;29(7):633–42. Available from: http://journals.sagepub.com/doi/10.1177/0269216315575850

16. Mampuya WA, Matsuo Y, Nakamura A, Hiraoka M. Evaluation of the prevalence of burnout and psychological morbidity among radiation oncologist members of the Kyoto Radiation Oncology Study Group (KROSG). J Radiat Res [Internet]. 2017 Mar 1;58(2):217–24. Available from: https://academic.oup.com/jrr/article/58/2/217/2605916

17. Grassi L, Magnani K. Psychiatric Morbidity and Burnout in the Medical Profession: An Italian Study of General Practitioners and Hospital Physicians. Psychother Psychosom [Internet]. 2000;69(6):329–34. Available from: https://www.karger.com/Article/FullText/12416

18. Maslach C, Jackson SE. The measurement of experienced burnout. J Organ Behav [Internet]. 1981 Apr;2(2):99–113. Available from: http://doi.wiley.com/10.1002/job.4030020205

19. Sirigatti S, Stefanile C. MBI Maslach Burnout Inventory: adattamento e taratura per l'Italia. In: MBI Maslach Burnout Inventory Manuale. Florence, Italy.: Firenze: OS Organizzazioni Speciali; 1993. p. 33–42.

20. Shanafelt TD, Boone S, Tan L, Dyrbye LN, Sotile W, Satele D, et al. Burnout and Satisfaction With Work-

Life Balance Among US Physicians Relative to the General US Population. Arch Intern Med [Internet]. 2012;172(OCT 8):1377–85. Available from: https://jamanetwork.com/

21. Reddy SK, Yennu S, Tanco K, Anderson AE, Guzman D, Ali Naqvi SM, et al. Frequency of Burnout Among Palliative Care Physicians Participating in a Continuing Medical Education Course. J Pain Symptom Manage [Internet]. 2020 Jul;60(1):80-86.e2. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0885392420300993
22. Endicott J, Nee J, Harrison W, Blumenthal R. Quality of Life Enjoyment and Satisfaction Questionnaire: a new measure. Psychopharmacol Bull [Internet]. 1993 [cited 2020 Oct 1];29(2):321–6. Available from: https://pubmed.ncbi.nlm.nih.gov/8290681/
23. Politi PL, Piccinelli M, Wilkinson G. Reliability, validity and factor structure of the 12-item General Health Questionnaire among young males in Italy. Acta Psychiatr Scand [Internet]. 1994 Dec 1 [cited 2020 Oct 1];90(6):432–7. Available from: http://doi.wiley.com/10.1111/j.1600-0447.1994.tb01620.x
24. Shanafelt TD, West CP, Sinsky C, Trockel M, Tutty M, Satele D V., et al. Changes in Burnout and Satisfaction With Work-Life Integration in Physicians and the General US Working Population Between 2011 and 2017. Mayo Clin Proc [Internet]. 2019 Sep 1 [cited 2020 Sep 23];94(9):1681–94. Available from: https://doi.org/10.1016/j.mayocp.2018.10.023
25. Ramirez A, Graham J, Richards M, Cull A, Gregory W, Leaning M, et al. Burnout and psychiatric disorder among cancer clinicians. Br J Cancer [Internet]. 1995 Jun;71(6):1263–9. Available from: http://www.nature.com/articles/bjc1995244
26. Lepnurm R, Lockhart WS, Keegan D. A Measure of Daily Distress in Practising Medicine. Can J Psychiatry [Internet]. 2009 Mar;54(3):170–80. Available from: http://journals.sagepub.com/doi/10.1177/070674370905400305
27. Asai M, Morita T, Akechi T, Sugawara Y, Fujimori M, Akizuki N, et al. Burnout and psychiatric morbidity among physicians engaged in end-of-life care for cancer patients: a cross-sectional nationwide survey in Japan. Psychooncology [Internet]. 2007 May;16(5):421–8. Available from: http://doi.wiley.com/10.1002/pon.1066
28. Kamal AH, Bull JH, Wolf SP, Swetz KM, Shanafelt TD, Ast K, et al. Prevalence and Predictors of Burnout Among Hospice and Palliative Care Clinicians in the U.S. J Pain Symptom Manage [Internet]. 2020 May;59(5):e6–13. Available from: https://doi.org/10.1016/j.jpainsymman.2019.11.017
29. Adibe B, Perticone K, Hebert C. Creating Wellness in a Pandemic: A Practical Framework for Health Systems Responding to Covid-19. NEJM Catal. 2020;
30. Adams JG, Walls RM. Supporting the Health Care Workforce During the COVID-19 Global Epidemic. JAMA [Internet]. 2020 Apr 21;323(15):1439. Available from: https://jamanetwork.com/journals/jama/fullarticle/2763136
31. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. JAMA Netw Open [Internet]. 2020 Mar 23;3(3):e203976. Available from: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2763229

32. Costantini M, Sleeman KE, Peruselli C, Higginson IJ. Response and role of palliative care during the COVID-19 pandemic: A national telephone survey of hospices in Italy. Palliat Med [Internet]. 2020 Jul 29;34(7):889–95. Available from: http://journals.sagepub.com/doi/10.1177/0269216320920780
33. Wu Y, Wang J, Luo C, Hu S, Lin X, Anderson AE, et al. A Comparison of Burnout Frequency Among Oncology Physicians and Nurses Working on the Frontline and Usual Wards During the COVID-19 Epidemic in Wuhan, China. J Pain Symptom Manage [Internet]. 2020 Jul;60(1):e60–5. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0885392420302050
34. Koh SJ, Keam B, Hyun MK, Seo JJ, Park KU, Oh SY, et al. Cancer pain management education rectifies patients' misconceptions of cancer pain, reduces pain, and improves quality of life. Pain Med (United States). 2018;19(12):2546–55.
35. Launer J. Burnout in the age of COVID-19. Postgrad Med J [Internet]. 2020 Jun 26;96(1136):367–8. Available from: https://pmj.bmj.com/lookup/doi/10.1136/postgradmedj-2020-137980
36. Barello S, Palamenghi L, Graffigna G. Stressors and Resources for Healthcare Professionals During the Covid-19 Pandemic: Lesson Learned From Italy. Front Psychol [Internet]. 2020 Oct 8;11. Available from: https://www.frontiersin.org/article/10.3389/fpsyg.2020.02179/full
37. Radbruch L, Knaul FM, de Lima L, de Joncheere C, Bhadelia A. The key role of palliative care in response to the COVID-19 tsunami of suffering. Lancet [Internet]. 2020 May;395(10235):1467–9. Available from: http://dx.doi.org/10.1016/S0140-6736(20)30964-8
38. Chen T-J, Lin M-H, Chou L-F, Hwang S-J. Hospice utilization during the SARS outbreak in Taiwan. BMC Health Serv Res [Internet]. 2006 Dec 4;6(1):94. Available from: https://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-6-94
39. Etkind SN, Bone AE, Lovell N, Cripps RL, Harding R, Higginson IJ, et al. The Role and Response of Palliative Care and Hospice Services in Epidemics and Pandemics: A Rapid Review to Inform Practice During the COVID-19 Pandemic. J Pain Symptom Manage [Internet]. 2020 Jul;60(1):e31–40. Available from: https://doi.org/10.1016/j.jpainsymman.2020.03.029
40. Schwartz J, King C-C, Yen M-Y. Protecting Healthcare Workers During the Coronavirus Disease 2019 (COVID-19) Outbreak: Lessons From Taiwan's Severe Acute Respiratory Syndrome Response. Clin Infect Dis [Internet]. 2020 Jul 28;71(15):858–60. Available from: https://academic.oup.com/cid/article/71/15/858/5804239
41. Powell VD, Silveira MJ. What Should Palliative Care's Response Be to the COVID-19 Pandemic? J Pain Symptom Manage [Internet]. 2020 Jul;60(1):e1–3. Available from: https://doi.org/10.1016/j.jpainsymman.2020.03.013
42. Tanzi S, Alquati S, Martucci G, De Panfilis L. Learning a palliative care approach during the COVID-19 pandemic: A case study in an Infectious Diseases Unit. Palliat Med [Internet]. 2020 Oct 31;34(9):1220–7. Available from: http://journals.sagepub.com/doi/10.1177/0269216320947289
43. Osman H, Shrestha S, Temin S, Ali Z V., Corvera RA, Ddungu HD, et al. Palliative Care in the Global Setting: ASCO Resource-Stratified Practice Guideline. J Glob Oncol [Internet]. 2018 Dec;(4):1–24.

Available from: https://ascopubs.org/doi/10.1200/JGO.18.00026

44. Centeno C, Sitte T, de Lima L, Alsirafy S, Bruera E, Callaway M, et al. White Paper for Global Palliative Care Advocacy: Recommendations from a PAL-LIFE Expert Advisory Group of the Pontifical Academy for Life, Vatican City. J Palliat Med [Internet]. 2018 Oct;21(10):1389–97. Available from: https://www.liebertpub.com/doi/10.1089/jpm.2018.0248

45. Hui D, Bruera E. Models of palliative care delivery for patients with cancer. J Clin Oncol [Internet]. 2020 Mar 20 [cited 2020 Oct 2];38(9):852–65. Available from: https://pubmed.ncbi.nlm.nih.gov/32023157/

46. Radbruch L, De Lima L, Knaul F, Wenk R, Ali Z, Bhatnaghar S, et al. Redefining Palliative Care—A New Consensus-Based Definition. J Pain Symptom Manage [Internet]. 2020 Oct;60(4):754–64. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0885392420302475

47. Tziraki C, Grimes C, Ventura F, O'Caoimh R, Santana S, Zavagli V, et al. Rethinking palliative care in a public health context: addressing the needs of persons with non-communicable chronic diseases. Prim Health Care Res Dev [Internet]. 2020 Sep 15;21:e32. Available from: https://doi.org/10.1017/S1463423620000328

48. Welp A, Meier LL, Manser T. Emotional exhaustion and workload predict clinician-rated and objective patient safety. Front Psychol [Internet]. 2015 Jan 22;5. Available from: http://journal.frontiersin.org/article/10.3389/fpsyg.2014.01573/abstract

49. Tawfik DS, Scheid A, Profit J, Shanafelt T, Trockel M, Adair KC, et al. Evidence relating health care provider burnout and quality of care a systematic review and meta-analysis. Ann Intern Med [Internet]. 2019 Oct 15;171(8):555–67. Available from: https://annals.org/aim/fullarticle/2752698/evidence-relating-health-care-provider-burnout-quality-care-systematic-review

50. Chen KY, Yang CM, Lien CH, Chiou HY, Lin MR, Chang HR, et al. Burnout, job satisfaction, and medical malpractice among physicians. Int J Med Sci. 2013;10(11):1471–8.

51. Williams ES, Manwell LB, Konrad TR, Linzer M. The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care. Health Care Manage Rev [Internet]. 2007 Jul;32(3):203–12. Available from: http://journals.lww.com/00004010-200707000-00003

52. Demerouti E, Bakker AB, Leiter M. Burnout and job performance: The moderating role of selection, optimization, and compensation strategies. J Occup Health Psychol [Internet]. 2014;19(1):96–107. Available from: http://doi.apa.org/getdoi.cfm?doi=10.1037/a0035062

53. Tawfik DS, Profit J, Morgenthaler TI, Satele D V., Sinsky CA, Dyrbye LN, et al. Physician Burnout, Well-being, and Work Unit Safety Grades in Relationship to Reported Medical Errors. Mayo Clin Proc [Internet]. 2018 Nov;93(11):1571–80. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0025619618303720

54. Chen Z, Leng J, Pang Y, He Y, Heng F, Tang L. Demographic, occupational, and societal features associated with burnout among medical oncology staff members: Cross-sectional results of a Cancer Center in Beijing, China. Psychooncology [Internet]. 2019 Dec 15 [cited 2020 Sep 22];28(12):2365–73.

Available from: https://pubmed.ncbi.nlm.nih.gov/31518037/

55. Williams ES, Manwell LB, Konrad TR, Linzer M. The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care. Health Care Manage Rev [Internet]. 2007 Jul;32(3):203–12. Available from: http://journals.lww.com/00004010-200707000-00003

56. Dewa CS, Loong D, Bonato S, Trojanowski L. The relationship between physician burnout and quality of healthcare in terms of safety and acceptability: a systematic review. BMJ Open [Internet]. 2017 Jun;7(6):e015141. Available from: https://bmjopen.bmj.com/lookup/doi/10.1136/bmjopen-2016-015141

57. Loerbroks A, Glaser J, Vu-Eickmann P, Angerer P. Physician burnout, work engagement and the quality of patient care. Occup Med (Chic Ill) [Internet]. 2017 Jul;67(5):356–62. Available from: https://academic.oup.com/occmed/article-lookup/doi/10.1093/occmed/kqx051

Journal Pre-proof

Tables

Table 1. Socio-demographic and professionals characteristics of 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=77**	**Nurses, n=75**	**Nurses, n=68**
Gender						
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%)
Age, mean (±St.Dev)	42 (±11)	42 (±12)	45 (±10)	48 (±10)	37 (±11)	36 (±10)
Marital status						
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%)	-
With children						
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%)
Years of work in palliative care						
<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%)
Geographical area of work†						
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**	
MBI subscale scores, mean (± St.Dev.)			**p†**			**p†**			**p†**
Emotional exhaustion (EE)	13.7 (±8.1)	12.7 (±7.2)	.200	14.5 (±8.7)	13.3 (±7.6)	.470	12.7 (±7.0)	11.8 (±6.5)	.306
Depersonalization (DP)	10.2 (±4.5)	7.1 (±4.6)	<.001	10.4 (±4.7)	7.0 (±4.6)	<.001	9.9 (±4.2)	7.1 (±4.7)	<.001
Personal accomplishment (PA)	33.3 (±5.5)	36.4 (±6.1)	<.001	33.2 (±5.3)	36.5 (±6.2)	<.001	33.4 (±5.7)	36.4 (±6.1)	<.001
PCPs showing burnout symptoms, n (%)§			**p‡**			**p‡**			**p‡**
High level of EE (≥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 (≥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 (≤29)	40 (22.3%)	17 (11.9%)	.018	20 (19.2%)	8 (10.5%)	.145	20 (26.7%)	9 (13.4%)	.062
PCPs showing burnout, n (%)¶			**p‡**			**p‡**			**p‡**
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

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

Journal Pre-proof

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

†Statistical analysis compared the GHQ-12 score between PCPs participating to the two studies by Mann-Whitney *U* Test; ‡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.

Journal Pre-proof

Journal Pre-proof

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.

	BURNOUT2016		COVID2020	
MBI dimension	**β coeff. (95% C.I)**	**p**	**β 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

Journal Pre-proof