

The concerns of oncology professionals during the COVID-19 pandemic: results from the ESMO Resilience Task Force survey II.

Authors

Kok Haw Jonathan Lim^{1,2,3}, Krithika Murali⁴, Konstantinos Kamposioras¹, Kevin Punie⁵, Christoph Oing⁶, Miriam O'Connor⁷, Eleanor Thorne⁸, Teresa Amaral^{9,10}, Pilar Garrido¹¹, Matteo Lambertini^{12,13}, Bharti Devnani¹⁴, C. Benedikt Westphalen¹⁵, Gilberto Morgan¹⁶, John B. A. G. Haanen¹⁷, Claire Hardy⁸, Susana Banerjee^{18,19}.

Affiliations

¹ Department of Medical Oncology, The Christie NHS Foundation Trust, Manchester, United Kingdom

² Department of Immunology and Inflammation, Imperial College London, London, United Kingdom

³ Immunobiology Laboratory, The Francis Crick Institute, London, United Kingdom

⁴ Victorian Clinical Genetics Services, The Royal Children's Hospital, Melbourne, Australia

⁵ Department of General Medical Oncology and Multidisciplinary Breast Center, Leuven Cancer Institute, University Hospitals Leuven, Leuven, Belgium

⁶ Department of Oncology, Hematology and Bone Marrow Transplantation with Division of Pneumology, Mildred Scheel Cancer Career Centre HaTriCs4, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

⁷ University Hospital Waterford, Waterford, Ireland

⁸ Division of Health Research, Faculty of Health and Medicine, Lancaster University, Lancaster, United Kingdom

⁹ Department of Dermatology, University Hospital Tübingen, 72076 Tübingen, Germany

¹⁰ Portuguese Air Force Health Care Direction, 1649-020 Lisbon, Portugal

¹¹ Medical Oncology, Hospital Ramón y Cajal. IRYCIS. Alcalá University, Madrid, Spain

¹² Department of Medical Oncology, U.O. Clinica di Oncologia Medica, IRCCS Ospedale Policlinico San Martino, Genova, Italy

¹³ Department of Internal Medicine and Medical Sciences (DiMI), School of Medicine, University of Genova, Genova, Italy

¹⁴ Department of Radiotherapy and Oncology, All India Institute of Medical Sciences, Jodhpur, India

¹⁵ Department of Internal Medicine III, University Hospital, LMU Munich and Comprehensive Cancer Center, Munich, Germany

¹⁶ Department of Medical and Radiation Oncology, Skåne University Hospital, Lund, Sweden

¹⁷ Division of Medical Oncology, Netherlands Cancer Institute, Amsterdam, The Netherlands

¹⁸ Gynaecology Unit, The Royal Marsden NHS Foundation Trust, London, United Kingdom

¹⁹ The Institute of Cancer Research, London, United Kingdom

1
2
3 **Corresponding author**
4

5 **Dr Susana Banerjee MA MBBS PhD FRCP**
6

7
8 The Royal Marsden NHS Foundation Trust and
9

10 Institute of Cancer Research
11

12 203 Fulham Road
13

14 London SW3 6JJ
15

16 United Kingdom
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18

19 Telephone: +44 (0)208 661 3563
20

21 Email: susana.banerjee@rmh.nhs.uk
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Preprint: For Review Only

HIGHLIGHTS

- Compared to Survey I¹, more oncology professionals were at risk of poor well-being (33% vs 25%) and burnout (49% vs 38%).
- Job performance since COVID-19 (JP-CV) has improved from 34% to 51%.
- About 1 in 5 who tested positive for COVID-19 felt they had not been given adequate time to recover prior to return to work.
- 39% expressed concerns that COVID-19 would have a negative impact on their career development or training.
- More than two-thirds revealed that COVID-19 had changed their outlook on work-personal life balance.

ABSTRACT

Background

The COVID-19 pandemic has resulted in significant changes to professional and personal lives of oncology professionals globally. The ESMO Resilience Task Force collaboration aimed to provide contemporaneous reports on the impact of COVID-19 on the lived experiences and well-being in oncology.

Methods

This online anonymous survey (July-August 2020) is the second of a series of global surveys launched during the course of the pandemic. Longitudinal key outcome measures including well-being/distress (expanded Well-being Index (eWBI – 9 items)), burnout (1 item from eWBI) and job performance since COVID-19 (JP-CV) were tracked.

Results

942 participants from 99 countries were included for final analysis: 58% (n=544) from Europe, 52% (n=485) female, 43% (n=409) \leq 40 years old, and 36% (n=343) of non-white ethnicity. In July/August 2020, 60% (n=525) continued to report a change in professional duties compared to pre-COVID-19 era. The proportion of participants at risk of poor well-being (33%, n=310) and reported feeling burnout (49%, n=460) had increased significantly compared to April/May 2020 (25% and 38%, respectively; $p < 0.001$), despite improved JP-CV (34% vs 51%; $p < 0.001$). Of those who had been tested for COVID-19, 8% (n=39/484) tested positive; 18% (n=7/39) felt they had not been given adequate time to recover prior to return to work. Since the pandemic, 39% (n=353/908) had expressed concerns that COVID-19 would have a negative impact on their career development or training and 40% (n=366/917) felt that their job

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3 security had been compromised. More than two-thirds (n=608/879) revealed that COVID-19
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5 has changed their outlook on their work-personal life balance.
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10 **Conclusion**

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12 The COVID-19 pandemic continues to impact the well-being of oncology professionals globally
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14 with significantly more in distress and feeling burnout compared to the first wave. Collective
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16 efforts from both national and international communities addressing support and coping
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18 strategies will be crucial as we recover from the COVID-19 crisis. In particular, an action plan
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20 should also be devised to tackle concerns raised regarding the negative impact of COVID-19
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22 on career development, training, and job security.
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30 **Funding**

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32 European Society for Medical Oncology (ESMO)
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40 **KEYWORDS**

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42 Well-being

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44 Burnout

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46 Job performance

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48 Oncology professionals

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50 Resilience

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INTRODUCTION

The COVID-19 pandemic and our response to it continues to shape lives globally. Many healthcare workers have seen both their professional and personal lives significantly impacted, with the oncology community being no exception. The ESMO (European Society for Medical Oncology) Resilience Task Force, established in December 2019, launched a longitudinal series of global surveys in April/May 2020 (Survey I) and July/August 2020 (Survey II) to evaluate the challenges posed by COVID-19 on the daily practice and well-being of oncology professionals.¹ Preliminary results from our survey series indicate that COVID-19 has had a significant impact on the oncology workforce. Of the 1520 survey I participants, 25% were at risk of distress, 38% reported feeling burnout, and 66% reported not being able to perform their job compared with the pre-COVID era.¹ A higher mortality rate from COVID-19 in individual countries correlated with poorer well-being. Individual psychological resilience and changes in work hours were also consistent predictors. This is in keeping with emerging trends in several studies reporting increased psychological distress and emotional exhaustion amongst healthcare workers, particularly with increased job demands, during this pandemic.²⁻⁵ Concerningly, amongst the 272 participants who completed both surveys I and II, a significant increase in risk of distress/poor well-being (22% versus 31%) and burnout (35% versus 49%) was already noted over a 3-month period during the pandemic despite improvements in job performance.¹

Here, we present the complete analysis of responses from all 942 participants of survey II of our global survey series.

METHODS

Survey design

Survey II (open from 16 July to 5 August 2020) formed part of the series of online global surveys designed by the ESMO Resilience Task Force, in collaboration with ESMO Young Oncologists Committee, ESMO Women for Oncology Committee, ESMO Leaders Generation Programme Alumni members, and the OncoAlert Network. The programme of work including this current survey was approved by the ESMO Executive Board. Participants were invited predominantly through ESMO membership emails, and open access to the survey, hosted on the Qualtrics platform, was also available to both members and non-members through the ESMO website and social media channels. Participation was voluntary and anonymous.

Survey measures

Key outcomes of interest including well-being, burnout and job performance since COVID-19 (JP-CV) were longitudinally monitored as per Survey I.¹ In brief, a calculated cumulative score of ≥ 4 on the validated expanded Well-being Index (eWBI) 9-item screening tool is considered at risk of poor well-being or distress.⁶ A 'yes' response to the single item from eWBI,^{1,7} 'have you felt burned out from your work?' was used as a surrogate for self-reported burnout amongst participants. JP-CV score of ≥ 3.5 was arbitrarily categorised as favourable JP-CV.¹

In addition, psychological resilience (single item 9-point bipolar scale, C. Hardy (unpublished data)), coping strategies, COVID-19-related job changes, perceptions of value and support, working environment, and changes to lifestyle were recorded. We also included contemporaneous questions relevant to participants' experiences during this period of the

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3 pandemic such as personal experience of COVID-19, perceptions of their career development
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5 and/or training and job security, and general outlook in life.
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10 **Statistical analysis**

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12 Key outcome variables including eWBI, burnout, JP-CV and psychological resilience were
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14 longitudinally compared to the results from Survey 1¹ to determine any changes over time.
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16 Descriptive data were presented as median (interquartile range, IQR) or mean±standard
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18 deviation (SD), and proportions were expressed as a percentage. Chi-square analysis was
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20 used to compare categorical variables and paired or unpaired t-test were used to analyse
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22 continuous variables; p-values were two-tailed and were considered significant if <0.05.
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24 Participants who completed $\geq 33\%$ of the survey (completion of survey beyond personal
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26 demographic profile and with the four key outcome variables above recorded) were included
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28 in the final analysis. All statistical analyses were performed using SPSS V.26.0 and data
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30 represented using GraphPad Prism V9.0.
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42 **RESULTS**

45 **Participant demographics**

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47 A total of 942 participants from 99 countries who completed $\geq 33\%$ of the online survey
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49 (n=816 (86.6%) with 100% completion) were included in the final analysis. By July/August
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51 2020, most participants (n=826, 87.7%) had experienced some form of lockdown/restriction
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53 in their region of work and only a minority (n=44, 4.7%) were working in a 'COVID-19-free'
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55 country. Table 1 summarises the key demographic characteristics of the participants.
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3 During the time of Survey II, responses were predominantly from Europe (n=544, 57.7%) with
4 the highest representation from those working in medical oncology (n=634, 67.3%) and those
5 working in a general hospital (n=421, 44.1%) or tertiary cancer centre (n=368, 39.1%) (Table
6 1). More than half of the participants were female (n=485, 51.5%), over 40 years old (n=533,
7 56.6%), and of white ethnicity (n=587, 62.3%) (Table 1). About 1 in 5 (n=184) were trainees,
8 and amongst those who were fully-trained oncologists, majority (n=437, 57.7%) had more
9 than 10 years of experience in the field (Table 1).
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23 **Changes in professional duties since COVID-19**

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25 In July/August 2020, the majority of participants (n=525/869, 60.4%) were still reporting a
26 change in their professional duties when compared to pre-COVID-19 era. The nature of
27 changes in professional duties are outlined in Table 2. There was a marked increase in remote
28 consultations (n=472/528, 89.4%), virtual multidisciplinary team/tumour board meetings
29 (n=450/534, 84.3%), remote meetings (n=506/550, 92.0%), and COVID-19-related research
30 activity (n=202/344, 58.7%) (Table 2). In particular, more than a third (n=221/575, 38.4%) had
31 reported an increase in overall hours of work in comparison to pre-COVID-19 work schedule
32 and about two-thirds (n=362/549, 65.9%) had reported an increase in hours working from
33 home (Table 2 and Supplementary Figure S1). The majority were still experiencing a reduction
34 in clinical trials (n=320/486, 65.8%) and other research (n=275/493, 55.8%) activities (Table
35 2). Overall, however, the self-reported job performance since COVID-19 (JP-CV) had increased
36 compared to April/May 2020; the proportion of those with JP-CV score ≥ 3.5 had increased
37 from 34.4% (n=523/1520) to 50.9% (n=444/873) in July/August 2020, $p < 0.001$.
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Personal experience of COVID-19

More than 1 in 5 participants (n=181/854, 21.2%) disclosed that their current circumstance or underlying comorbidities would put them at an increased personal risk of being seriously ill from COVID-19 (Table 3). Amongst those who had been tested (n=484), 39 participants (8.1%) had had COVID-19. Most underwent isolation or sick leave due to COVID-19 symptoms (n=25/39, 64.1%). Within this subgroup who had had COVID-19, the median duration of symptomatic COVID-19 was 8.5 days (n=22, range 1 to 42 days). About 1 in 5 (n=7/39) did not feel they were given appropriate time to recover and 11 participants (28.2%) did not feel completely recovered upon return to work. Notably, 14.8% (n=126/849) revealed that they have had a colleague who has died from COVID-19.

The impact of COVID-19 on perception of career development and training

As the COVID-19 pandemic evolved, we questioned participants regarding their outlook in their personal and professional life. Alarming, 38.9% (n=353/908) had expressed concerns that the pandemic would have a negative impact on their career development and/or training, and 39.9% (n=366/917) felt that COVID-19 has negatively impacted on their job security (Figure 1a-1b). Majority (n=650/861, 75.5%) were also concerned about the negative impact on international fellowship opportunities (Figure 1c).

The feeling of loss of control and helplessness during the COVID-19 crisis

During the course of the COVID-19 pandemic, more than a third of participants (n=339/859, 37.5%) had experienced a loss of control or felt helpless in meeting the expectations of their patients (Figure 1d). Similarly, more than a quarter also expressed the perception of loss of control or helplessness in meeting the expectations of their colleagues, supervisor and/or

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3 employer (Figure 1d). Additionally, more than half feeling loss of control or helpless with
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5 regards to pursuing their career goal (n=458/866, 52.9%) (Figure 1e).
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10 On personal reflection, for more than two-thirds of participants (n=608/879, 69.2%), the
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12 COVID-19 pandemic had changed their outlook on work-personal life balance (Figure 1f). A
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14 majority (n=612/870, 70.3%) would like to dedicate more time to their personal life, however
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16 only less than a third (n=271/863, 31.4%) felt that a change in their work-personal life balance
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18 could be easily achievable (Figure 1f). Currently, 43.0% (n=405/942) of participants did not
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20 feel that their work schedule leaves them enough time for their personal and family life.
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28 **Well-being and burnout**

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30 Among participants, 32.9% (n=310) were at risk of poor well-being (eWBI score ≥ 4) and 48.8%
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32 (n=460) reported feeling burnout compared to 25% (p<0.001) and 38% (p<0.001) of the 1520
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34 participants surveyed in April/May 2020, respectively. The magnitude of increase in both of
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36 these outcome measures were also seen within the subgroup of 272 participants who
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38 responded to both Surveys I and II.¹
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45 **Resilience, well-being support and coping strategies**

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47 Collectively, there was no difference in psychological resilience amongst participants in both
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49 Surveys I and II: mean score 6.4 ± 1.9 versus 6.4 ± 2.0 , respectively (p=0.82). Access to well-
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51 being support services was available to less than half of the participants (n=421, 44.7%).
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53 Supplementary Table S1 summarises a variety of well-being support services and coping
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55 strategies commonly used by participants during this COVID-19 pandemic. Importantly,
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57 majority continued to feel well-supported by their friends and/or family (n=729/835, 87.3%)
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3 and by their colleagues at work (n=648/835, 77.6%). In Survey II, 63.9% (n=537/841) and
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5 53.7% (n=452/841) expressed feeling valued by the public and their work organisation,
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7 respectively.
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10 11 12 13 14 15 **DISCUSSION** 16

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18 Within a three-month period (April/May 2020 to July/August 2020) at the beginning of the
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20 COVID-19 pandemic, Survey II has already highlighted a significant increase in risk of poor
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22 well-being (33% versus 25%) and burnout (49% versus 38%). This is despite significant
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24 improvement in self-reported job performance over the same time period. This is an alarming
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26 finding and suggests that although oncology professionals may be adapting effectively to
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28 change, they continue to be at increasing risk of distress.
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35 Survey II highlights a number of factors in the current climate that may be contributing to this
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37 deterioration in well-being. Most participants (n=826, 88%) had experienced some form of
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39 lockdown/restriction in their region of work. In addition to such significant imposed changes
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41 in their personal lives, around 60% of participants continued to report a change in
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43 professional duties. Some of these, such as an increase in remote consultations and virtual
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45 meetings, have their advantages.^{4,8} However, nearly 40% had reported an overall increase in
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47 their work hours compared to their pre-COVID-19 schedule (also see supplementary Figure
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49 S1). The majority had also experienced a reduction in clinical trials and traditional oncology-
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51 focused research activity. These are an integral part of working life in oncology and often a
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53 source of meaning. Increased working hours and a reduction in activities that are
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55 professionally meaningful are well-known risk factors for burnout.⁹
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3 More Survey II participants had reported a close personal experience with COVID-19 either
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5 by testing positive for SARS-CoV-2 (8%) or requiring self-isolation or sick leave due to COVID-
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7 19 symptoms (18%). Worryingly, nearly 15% had had a colleague die from COVID-19.
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9 Furthermore, one in five participants also disclosed that they had underlying comorbidities
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11 that would put them at an increased personal risk of being seriously ill from COVID-19. Of
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13 those who have had COVID-19, the median duration of symptomatic COVID-19 was 8.5 days
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15 but notably, the range for this was broad, from 1 to 42 days. Importantly, 18% feel that they
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17 did not have enough time to recover from illness and close to 30% did not feel completely
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19 recovered from illness prior to returning to work. Given the reports of potential substantial
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21 long-term morbidity associated with COVID-19 ('long COVID'),^{10,11} this is particular cause for
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23 concern and will require careful ongoing monitoring.
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33 A substantial number of participants had expressed significant uncertainty about the future
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35 of their professional lives. Approximately 40% felt that COVID-19 would have a negative
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37 impact on their career development, training, and job security. Over 75% were also concerned
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39 about the negative impact on international fellowship opportunities, an important facet of
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41 professional development in oncology. This ties in with a recurrent concern expressed by
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43 participants of loss of control or helplessness in achieving their career goals (53%).
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50 Anxiety and fear amongst healthcare workers can be associated with higher rates of burnout.⁴
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52 Delays in patient care and treatment have been a substantial source of distress in other
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54 studies for oncology practitioners.⁴ These are understandable responses in a climate of crisis
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56 and prolonged uncertainty as has been noted during previous pandemics.³ Overall, our
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58 findings highlight significantly increasing rates of distress and burnout. The rapidity in the
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3 rates of increased burnout distress within a three-month period is a notable finding and a
4 major cause for concern. This may be an ominous harbinger of what lies ahead in ongoing
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6 and future ESMO Resilience Task Force surveys which have coincided with periods of
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8 extended lockdown and further 'waves' of cases and deaths. The time for action therefore is
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10 now. Survey II already highlights useful areas of support and immediate intervention that may
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12 be of benefit to oncology professionals globally.
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20 Firstly, there are significant measures organisations can take to improve the well-being of
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22 staff. Enhanced mentorship of practitioners to ensure ongoing support for career
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24 development and planning as well as sourcing of suitable professional opportunities. Despite
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26 the focus on the COVID-19 response, ongoing investment in oncology-focused research and
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28 clinical trials need to continue, including fostering transnational fellowship opportunities.¹²⁻¹⁴
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30 More particularly, despite additional pressures, the accessible and continued support of
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32 supervisors for trainees is even more paramount. A routinely scheduled time for a "team
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34 huddle" or debriefing program for all staff in the emergency department has been shown to
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36 be well-received and beneficial for both junior and senior team members alike during these
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38 challenging times.¹⁵
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47 Secondly, the personal impact of COVID-19 on the health and well-being of oncology
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49 professionals have been emphasised by the findings of Survey II. Ensuring safe work
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51 conditions, including access to personal protective equipment, COVID-19 testing, and
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53 vaccination are paramount.^{16,17} Also ensuring the provision of adequate sick leave for self-
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55 isolation and recovery from symptoms should be mandated, as well as, supporting "shielding"
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57 practices to ensure those with comorbidities are in lower risk activities or exposure sites. The
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3 number of participants who had experienced the death of a colleague also raises the need for
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5 adequate access to bereavement support. Participants had similarly highlighted that access
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7 to counselling/psychological services and other resources to promote well-being and coping
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9 strategies would be welcomed.
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15 Of importance for future oncology workforce planning, the majority of participants had
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17 reported changing their outlook on their work-personal life balance as a result of the COVID-
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19 19 pandemic, including a desire for better work-life balance. The majority supported flexible
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21 working hours, including working from home. Ensuring work hours and workplace flexibility
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23 as well as encouraging staff to take annual leave are important organisational leadership
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25 measures.
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32 Although we focus on the solutions necessary, participants had likewise shared a number of
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34 strategies they were already using to cope currently, such as tapping into personal and
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36 professional support networks, employing strategies such as mindfulness meditation and
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38 smartphone apps, and feeling valued by their organisation. Supportive interventions need to
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40 be multi-faceted with workplaces, and national and international oncology societies such as
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42 ESMO and American Society of Clinical Oncology (ASCO)¹⁸ playing a key facilitative role.
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50 A significant strength of Survey II is our substantial participant size of 942 and scope with 99
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52 countries being represented. Over a third of our participants were from Germany, India,
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54 United Kingdom, Italy, Spain and Brazil – a number of these countries have borne the brunt
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56 of global morbidity and mortality, which makes their representation in this survey important
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58 and notable. There was even representation across the genders (52% female), as well as
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3 young oncologists (43%), current trainees (20%), and those of non-white ethnicity (36%), as
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5 our previous research and that of other groups have found these groups to be at particularly
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7 heightened risk of experiencing burnout.^{1,19,20} More than a third of participants were of non-
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9 white ethnicity, which is again an important aspect as studies have shown that those of black
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11 or minority ethnic backgrounds are at higher risk of complications from COVID-19.²¹
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18 A key factor in the well-being of all during these times has been the response of individual
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20 nations to this pandemic. Only a small minority of participants in our survey (4%) were from
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22 'COVID-19-free' nations which reflects their smaller population size. Our ability to discern the
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24 difference in well-being between those in higher prevalence versus COVID-19-free regions
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26 has been limited by this small sample size. This is also a cross-sectional, observational study
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28 which limits our ability to infer causality. However, to our knowledge, this is the only survey
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30 series in oncology addressing well-being systematically and longitudinally throughout the
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32 course of the COVID-19 pandemic. A substantially larger dataset from the recently closed
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34 Survey III and more detailed longitudinal statistical analyses of factors associated with well-
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36 being, burnout and distress will provide further insight into navigating recovery plans going
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38 forwards. The collective experience shared by participants completing this survey series, and
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40 the ongoing work of the ESMO Resilience Taskforce and other organisations will help direct
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42 efforts to support the well-being of oncology professionals globally.
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Contributors

K.H.J.L., K.M., K.K., K.P., C.O., M.O.C., J.B.A.G.H., C.H. and S.B. conceived and designed the study. K.H.J.L. and E.T. analysed the data. All co-authors were involved in data interpretation. K.H.J.L. produced the manuscript figures and tables. K.H.J.L., K.M. and S.B. wrote the first draft of the paper. All co-authors contributed to reviewing and editing drafts of the paper. K.H.J.L., K.M. and S.B. were involved in the final reviewing and editing of the paper and approving the manuscript.

Acknowledgements

We would like to thank all participants for taking part, and national societies and organizations who helped distribute the survey. We would also like to thank Francesca Longo, Mariya Lemosle and Katharine Fumasoli from the ESMO Head Office for providing vital administrative support for the delivery of this study.

Funding

European Society for Medical Oncology (ESMO): For license to use Qualtrics (online survey platform), and publication of figure fee.

Disclosure

K.H.J.L. is currently funded by the Wellcome-Imperial 4i Clinical Research Fellowship, and reports speaker honorarium from Janssen, outside the submitted work.

K.P.'s institution received speaker fees or honoraria for consultancy/advisory roles from Astra Zeneca, Eli Lilly, Gilead Sciences, Medscape, MSD, Novartis, Pfizer, Pierre Fabre, Hoffmann La Roche, Mundi Pharma, PharmaMar, Teva, Vifor Pharma; KP's institution received a research grant from Sanofi; KP received travel support from Astra Zeneca, Novartis, Pfizer, PharmaMar and Roche; all outside the submitted work.

C.O. reports research funding and honoraria from Roche; travel grant and honoraria from Medac Pharma and Ipsen Pharma; and travel grant from PharmaMar; outside the submitted work.

T.A. reports personal fees from Pierre Fabre and CeCaVa; personal fees and travel grants from BMS; grants, personal fees and travel grants from Novartis; and grants from Neracare, Sanofi and SkylineDx; all outside the submitted work.

1
2
3 P.G. reports personal fees from Roche, MSD, BMS, Boehringer-Ingelheim, Pfizer, AbbVie,
4 Novartis, Lilly, AstraZeneca, Janssen, Blueprint Medicines, Takeda, Gilead, and ROVI, outside
5 the submitted work.
6
7

8
9 M.L. acted as a consultant for Roche, AstraZeneca, Lilly and Novartis, and received honoraria
10 from Theramex, Roche, Novartis, Takeda, Pfizer, Sandoz, and Lilly, outside the submitted
11 work.
12

13
14 C.B.W. reports speaker honoraria, travel support and advisory board: Bayer, BMS, Celgene,
15 Roche, Servier, Shire/Baxalta, RedHil, and Taiho; speaker honoraria from Ipsen; and advisory
16 board in GSK, Sirtex, and Rafael; outside the submitted work.
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20 J.B.A.G.H. reports personal fees for advisory role in Neogene Tx; grants and fees paid to
21 institution from BMS, MSD, Novartis, BioNTech, Amgen; and fees paid to institution from
22 Achilles Tx, GSK, Immunocore, Ipsen, Merck Serono, Molecular Partners, Pfizer,
23 Roche/Genentech, Sanofi, Seattle Genetics, Third Rock Ventures, Vaximm; outside the
24 submitted work.
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28 C.H. reports being Director of a private company Hardy People Ltd., outside the submitted
29 work.
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32 S.B. reports research grant (institution) from AstraZeneca, Tesaro and GSK; honoraria from
33 Amgen, AstraZeneca, MSD, GSK, Clovis, Genmab, Merck Serono, Mersana, Pfizer, Seattle
34 Genetics, and Tesaro; outside the submitted work.
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38 K.M., K.K., M.O.C., E.T., B.D., and G.M. have nothing to disclose.
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REFERENCES

1. Banerjee S, Lim KHJ, Murali K, *et al.* The impact of COVID-19 on oncology professionals: results of the ESMO Resilience Task Force survey collaboration. *ESMO Open* 2021; **6**(2): 100058.
2. Ng KYY, Zhou S, Tan SH, *et al.* Understanding the Psychological Impact of COVID-19 Pandemic on Patients With Cancer, Their Caregivers, and Health Care Workers in Singapore. *JCO Glob Oncol* 2020; **6**: 1494-509.
3. Barello S, Caruso R, Palamenghi L, *et al.* Factors associated with emotional exhaustion in healthcare professionals involved in the COVID-19 pandemic: an application of the job demands-resources model. *Int Arch Occup Environ Health* 2021.
4. Yao KA, Attai D, Bleicher R, *et al.* Covid-19 related oncologist's concerns about breast cancer treatment delays and physician well-being (the CROWN study). *Breast Cancer Res Treat* 2021; **186**(3): 625-35.
5. Marton G, Vergani L, Mazzocco K, Garassino MC, Pravettoni G. 2020s Heroes Are Not Fearless: The Impact of the COVID-19 Pandemic on Wellbeing and Emotions of Italian Health Care Workers During Italy Phase 1. *Front Psychol* 2020; **11**: 588762.
6. Dyrbye LN, Satele D, Shanafelt T. Ability of a 9-Item Well-Being Index to Identify Distress and Stratify Quality of Life in US Workers. *J Occup Environ Med* 2016; **58**(8): 810-7.
7. Dyrbye LN, Satele D, Sloan J, Shanafelt TD. Utility of a brief screening tool to identify physicians in distress. *J Gen Intern Med* 2013; **28**(3): 421-7.
8. Hoffman KE, Garner D, Koong AC, Woodward WA. Understanding the Intersection of Working from Home and Burnout to Optimize Post-COVID19 Work Arrangements in Radiation Oncology. *Int J Radiat Oncol Biol Phys* 2020; **108**(2): 370-3.
9. Murali K, Makker V, Lynch J, Banerjee S. From Burnout to Resilience: An Update for Oncologists. *Am Soc Clin Oncol Educ Book* 2018; **38**: 862-72.
10. Venkatesan P. NICE guideline on long COVID. *Lancet Respir Med* 2021; **9**(2): 129.
11. Shah W, Hillman T, Playford ED, Hishmeh L. Managing the long term effects of covid-19: summary of NICE, SIGN, and RCGP rapid guideline. *BMJ* 2021; **372**: n136.
12. Bakouny Z, Hawley JE, Choueiri TK, *et al.* COVID-19 and Cancer: Current Challenges and Perspectives. *Cancer Cell* 2020; **38**(5): 629-46.
13. Morgan G, Lambertini M, Kourie HR, *et al.* Career opportunities and benefits for young oncologists in the European Society for Medical Oncology (ESMO). *ESMO Open* 2016; **1**(6): e000107.
14. Morgan G, de Azambuja E, Punie K, *et al.* OncoAlert Round Table Discussions: The Global COVID-19 Experience. *JCO Glob Oncol* 2021; **7**: 455-63.

15. Azizoddin DR, Vella Gray K, Dundin A, Szyld D. Bolstering clinician resilience through an interprofessional, web-based nightly debriefing program for emergency departments during the COVID-19 pandemic. *J Interprof Care* 2020; **34**(5): 711-5.
16. Curigliano G, Banerjee S, Cervantes A, *et al.* Managing cancer patients during the COVID-19 pandemic: an ESMO multidisciplinary expert consensus. *Ann Oncol* 2020; **31**(10): 1320-35.
17. Garassino MC, Vyas M, de Vries EGE, *et al.* The ESMO Call to Action on COVID-19 vaccinations and patients with cancer: Vaccinate. Monitor. Educate. *Ann Oncol* 2021; **32**(5): 579-81.
18. Hlubocky FJ, Symington BE, McFarland DC, *et al.* Impact of the COVID-19 Pandemic on Oncologist Burnout, Emotional Well-Being, and Moral Distress: Considerations for the Cancer Organization's Response for Readiness, Mitigation, and Resilience. *JCO Oncol Pract* 2021: OP2000937.
19. Banerjee S, Califano R, Corral J, *et al.* Professional burnout in European young oncologists: results of the European Society for Medical Oncology (ESMO) Young Oncologists Committee Burnout Survey. *Ann Oncol* 2017; **28**(7): 1590-6.
20. Torrente M, Sousa PA, Sanchez-Ramos A, *et al.* To burn-out or not to burn-out: a cross-sectional study in healthcare professionals in Spain during COVID-19 pandemic. *BMJ Open* 2021; **11**(2): e044945.
21. Sze S, Pan D, Nevill CR, *et al.* Ethnicity and clinical outcomes in COVID-19: A systematic review and meta-analysis. *EClinicalMedicine* 2020; **29**: 100630.

TABLE CAPTIONS

Table 1 Participant demographics (n=942).

Table 2 Overview of the changes in professional duties since the COVID-19 outbreak (n=942).

Table 3 Participants' personal experience of COVID-19 (n=854)

FIGURE CAPTIONS

Figure 1 The impact of COVID-19 on (a- c) the perception of career development and/or training opportunities (n=925), (d-e) sense of control (n=892), and (f) future outlook in work/personal life balance (n=892).

Figure 2 Summary of key suggestions from participants on well-being and coping strategies which might be helpful as part of the COVID-19 recovery plan (n=827).

SUPPLEMENTARY DATA

Table S1 Well-being support and coping strategies amongst participants during the COVID-19 crisis (n=942).

Figure S1 Comparison of self-reported working hours amongst participants during Survey I (16 April to 3 May 2020) (n=1520) and Survey II (16 July to 5 August 2020) (n=872).

Figure S2 Working environment during the COVID-19 pandemic in July/August 2020 (n=846).

Table 1

	Number (%)
Age (years)	
≤40	409 (43.4%)
>40	533 (56.6%)
Gender	
Female	485 (51.5%)
Male	456 (48.4%)
<i>Prefer not to say</i>	1 (0.1%)
Ethnicity	
White	587 (62.3%)
Asian (East/Southeast)	137 (14.5%)
Asian (South)	68 (7.2%)
Hispanic	67 (7.1%)
Arab	27 (2.9%)
Mixed	22 (2.3%)
Black	16 (1.7%)
Other	6 (0.6%)
<i>Prefer not to say</i>	12 (1.3%)
Lives alone	
Yes	167 (17.7%)
No	775 (82.3%)
Have children	
Yes	562 (59.7%)
No	380 (40.3%)
Median number of children, n=562	2 (range 1-8)
Age of children, n=562	
Pre-school	151 (26.9%)
Primary school	181 (32.2%)
Secondary school	143 (25.4%)
Adult (living at home)	105 (18.7%)
Adult (not living at home)	148 (26.3%)
Region^a	
Europe^b	
Central Europe	160 (17.0%)
Southwestern Europe	122 (13.0%)
Northern Europe and British Isles	93 (9.9%)
Southeastern Europe	89 (9.4%)
Western Europe	49 (5.2%)
Eastern Europe	31 (3.3%)
Asia	192 (20.4%)
North America	74 (7.9%)
South America	69 (7.3%)
Africa	38 (4.0%)

Oceania	23 (2.4%)
<i>Prefer not to say</i>	2 (0.2%)
Primary place of work	
General hospital	421 (44.1%)
Cancer centre	368 (39.1%)
Private outpatient clinic	70 (7.4%)
Pharmaceutical/technology company	18 (1.9%)
Healthcare organisation	14 (1.5%)
Other	51 (5.4%)
Specialty^c	
Medical oncology	634 (67.3%)
Clinical oncology	178 (18.9%)
Haemato-oncology	102 (10.8%)
Palliative care	61 (6.5%)
Radiation oncology	53 (5.6%)
Laboratory-based researcher/scientist	33 (3.5%)
Surgical oncology	26 (2.8%)
Nursing	11 (1.2%)
Other	60 (6.4%)
Trainee	
Yes	184 (19.5%)
No	758 (80.5%)
Duration of training completed (years), n=184	
<2	36 (19.6%)
2-5	103 (56.0%)
>5	45 (24.4%)
Post-training oncology experience (years), n=758	
<5	152 (20.0%)
5-10	165 (21.8%)
>10	437 (57.7%)
<i>Not applicable</i>	4 (0.5%)
ESMO member	
Yes	854 (90.7%)
No	88 (9.3%)

^aCountries most represented were Germany (n=85), India (n=67), United Kingdom (n=62), Italy (n=56), Spain (n=44) and Brazil (n=34).

^bCentral Europe – Austria, Czech Republic, Germany, Hungary, Poland, Romania, Slovakia, Slovenia, Switzerland; Southwestern Europe – Italy, Portugal, Spain; Northern Europe and the British Isles – Denmark, Finland, Norway, Republic of Ireland, Sweden, United Kingdom; Southeastern Europe – Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Greece, Israel, Kosovo, Montenegro, North Macedonia, Serbia, Turkey; Western Europe – Belgium, France, Luxembourg, The Netherlands; and Eastern Europe – Belarus, Estonia, Georgia, Latvia, Lithuania, Moldova, Russian Federation, Ukraine).

^cNote that some participants have selected 2 or more specialties within their job role, and proportion of representation is summarised as such.

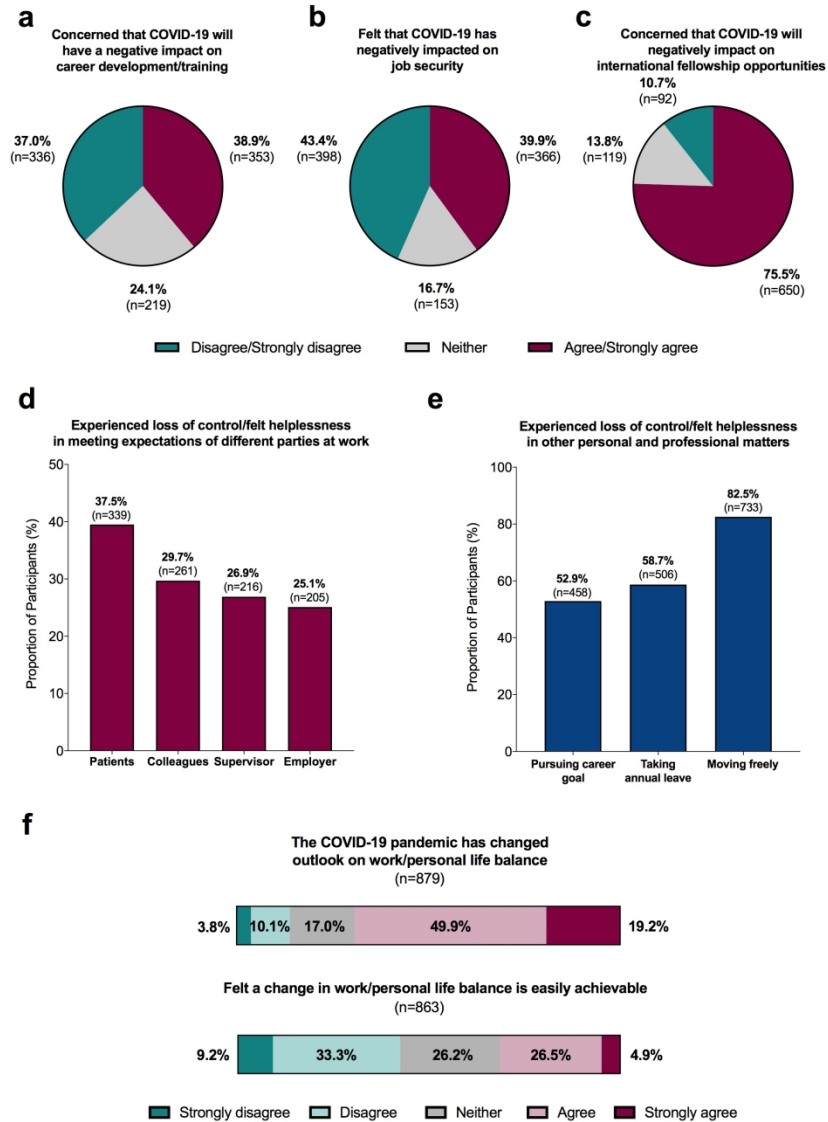
Table 2

	Number (%)			
Change in professional duties				
Yes	525 (60%)			
No	344 (40%)			
Work routine has returned to pre-COVID-19 situation	<i>Disagree</i>	<i>Neither</i>	<i>Agree</i>	
	441 (51%)	148 (17%)	280 (32%)	
Nature of change in duties, n=579				
Scope of clinical work	<i>Increased</i>	<i>No change</i>	<i>Decreased</i>	<i>N/A</i>
Direct patient care	135 (26%)	200 (38%)	190 (36%)	54
Remote consultations	472 (89%)	40 (8%)	16 (3%)	51
Inpatient work	111 (22%)	205 (41%)	179 (36%)	84
COVID-19 inpatient work	137 (40%)	164 (48%)	39 (12%)	239
Covering other oncology patients	132 (31%)	230 (54%)	64 (15%)	153
Covering non-oncology specialties	120 (32%)	226 (59%)	34 (9%)	199
Virtual MDT/tumour board meetings	450 (84%)	59 (11%)	25 (5%)	45
Remote meetings	506 (92%)	29 (5%)	15 (3%)	29
Working hours and shift patterns	<i>Increased</i>	<i>No change</i>	<i>Decreased</i>	<i>N/A</i>
Overall hours of work	221 (38%)	198 (34%)	156 (27%)	4
Out-of-hours work in hospital	183 (36%)	197 (39%)	128 (25%)	71
Hours working from home	362 (66%)	156 (28%)	31 (6%)	30
Weekend shifts	87 (19%)	295 (65%)	72 (16%)	125
Overnight shifts	61 (15%)	277 (70%)	57 (14%)	184
Clinical trial and research activity	<i>Increased</i>	<i>No change</i>	<i>Decreased</i>	<i>N/A</i>
Clinical trial activity	34 (7%)	132 (27%)	320 (66%)	93
Research (non-clinical trials) activity	79 (16%)	139 (28%)	275 (56%)	86
COVID-19 related research	202 (59%)	120 (35%)	22 (6%)	235
Redeployed				
Yes	45 (5.2%)			
Partially	140 (16.0%)			
No	687 (78.8%)			
Duration of redeployment, n=185				
<4 weeks	61 (33.0%)			
1-3 months	77 (41.6%)			
>3 months	44 (23.8%)			
<i>Prefer not to say</i>	3 (1.6%)			

Table 3

	Number (%)
Increased personal risk due to comorbidities or condition	
Yes	181 (21.2%)
No	648 (75.9%)
<i>Prefer not to say</i>	25 (2.9%)
Characteristics of comorbidities or condition	
Cardiac	53 (6.2%)
Respiratory	45 (5.3%)
Diabetes mellitus	28 (3.3%)
Immunosuppressed	20 (2.3%)
Renal, Hepatic or Neurological	9 (1.1%)
Pregnant	6 (0.7%)
Other	65 (7.6%)
Tested positive for COVID-19, n=484	
Yes	39 (8.1%)
No	445 (91.9%)
Isolation or sick leave due to COVID-19 symptoms, n=39	
<2 weeks	5 (12.8%)
2-4 weeks	17 (43.6%)
>4 weeks	3 (7.7%)
No	13 (33.3%)
<i>Prefer not to say</i>	1 (2.6%)
Hospitalised for COVID-19, n=39	
<2 weeks	0
2-4 weeks	1 (2.6%)
>4 weeks	0
No	37 (94.9%)
<i>Prefer not to say</i>	1 (2.6%)
Median duration of symptomatic COVID-19, n=22	8.5 days (1-42)
Feel given appropriate time to recover, n=39	
Yes	28 (71.8%)
No	7 (17.9%)
<i>Prefer not to say</i>	4 (10.3%)
Feel completely recovered upon return to work, n=39	
Yes	25 (64.1%)
No	11 (28.2%)
<i>Prefer not to say</i>	3 (7.7%)
Had colleague who has died from COVID-19, n=849	
Yes	126 (14.8%)
No	713 (84.0%)
<i>Prefer not to say</i>	10 (1.2%)

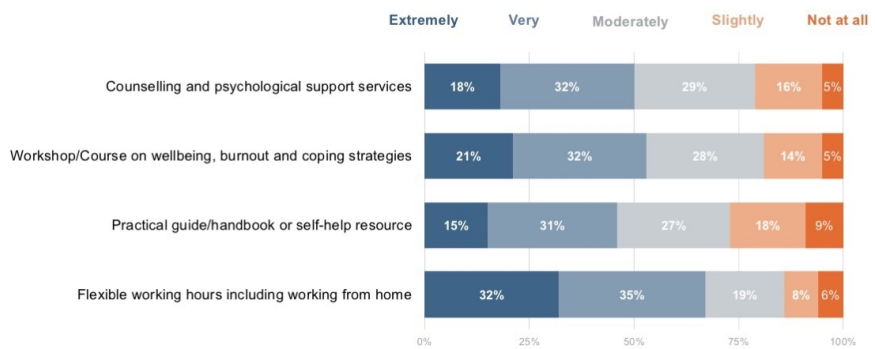
Figure 1



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Figure 2



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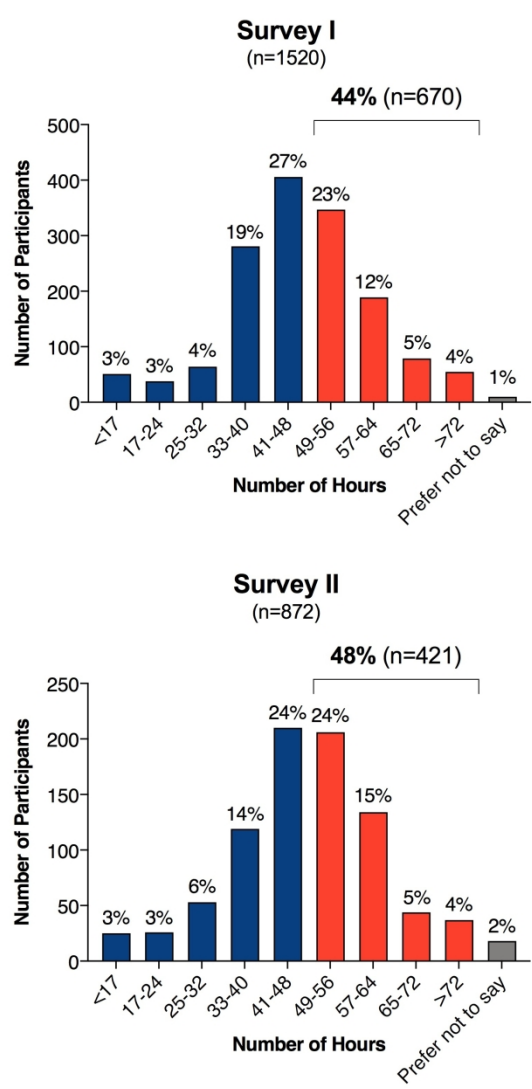
Table S1

Wellbeing support and coping strategies amongst participants during the COVID-19 crisis (n=942)

	Number (%)
Access to wellbeing support services, n=942	421 (44.7%)
Wellbeing support services used, n=421	
Online or smartphone apps	105 (24.9%)
Spiritual or religious support	90 (21.4%)
Psychological support from work	72 (17.1%)
Personal psychiatrist or psychologist	48 (11.4%)
Telephone support	45 (10.7%)
Charities supporting mental health	11 (2.6%)
Psychological support from national organisations	9 (2.1%)
Other	23 (5.5%)
None	175 (41.6%)
Feeling well-supported during COVID-19, n=835	
By friends and/or family	729 (87.3%)
By colleagues at workplace	648 (77.6%)
By management of workplace	448 (53.7%)
By global or national societies	423 (50.7%)
By government	286 (34.3%)
Feeling valued, n=841	
By the public	537 (63.9%)
By work organisation	452 (53.7%)
Coping strategies used, n=942	
Thinking of positives	431 (45.8%)
Change in physical activity (e.g. exercise)	427 (45.3%)
Talking to colleagues to get information	328 (34.8%)
Using humour, laughing	311 (33.0%)
Strategising and planning steps to take	274 (29.1%)
Distracting myself	263 (27.9%)
Talking to colleagues to get emotional support	244 (25.9%)
Changing in diet (e.g. types of food, amount)	238 (25.3%)
Using meditation, mindfulness or other relaxation techniques	196 (20.8%)
Using religious or spiritual practice(s)	173 (18.4%)
Avoiding thinking about or not thinking about it	163 (17.3%)
Changes in substance intake (e.g. smoking, alcohol, others)	104 (11.0%)
Other	37 (3.9%)
None	101 (10.7%)

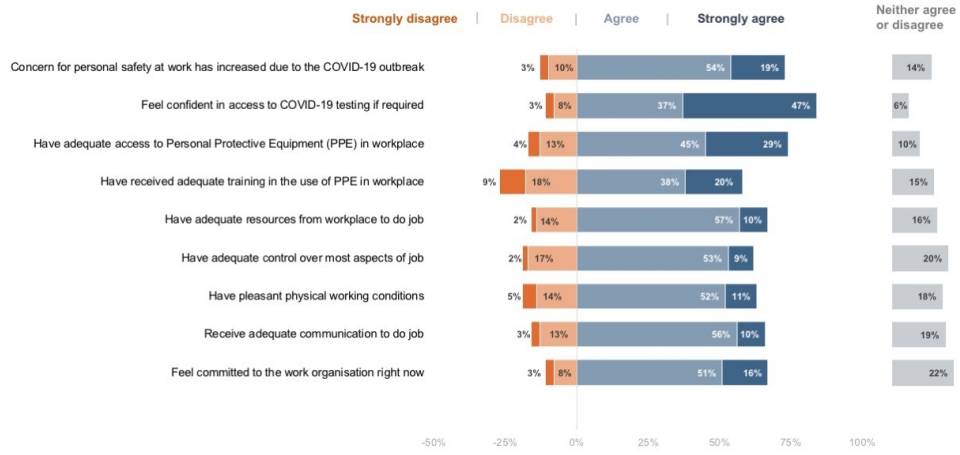
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Figure S1
Comparison of self-reported working hours amongst participants during Survey I (16 April to 3 May 2020) and Survey II (16 July to 5 August 2020).



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Figure S2
Working environment during the COVID-19 pandemic in July/August 2020 (n=846)



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The concerns of oncology professionals during the COVID-19 pandemic: results from the ESMO Resilience Task Force survey II.

Authors

Kok Haw Jonathan Lim^{1,2,3}, Krithika Murali⁴, Konstantinos Kamposioras¹, Kevin Punie⁵, Christoph Oing⁶, Miriam O'Connor⁷, Eleanor Thorne⁸, Teresa Amaral^{9,10}, Pilar Garrido¹¹, Matteo Lambertini^{12,13}, Bharti Devnani¹⁴, C. Benedikt Westphalen¹⁵, Gilberto Morgan¹⁶, John B. A. G. Haanen¹⁷, Claire Hardy⁸, Susana Banerjee^{18,19}.

Affiliations

¹ Department of Medical Oncology, The Christie NHS Foundation Trust, Manchester, United Kingdom

² Department of Immunology and Inflammation, Imperial College London, London, United Kingdom

³ Immunobiology Laboratory, The Francis Crick Institute, London, United Kingdom

⁴ Victorian Clinical Genetics Services, The Royal Children's Hospital, Melbourne, Australia

⁵ Department of General Medical Oncology and Multidisciplinary Breast Center, Leuven Cancer Institute, University Hospitals Leuven, Leuven, Belgium

⁶ Department of Oncology, Hematology and Bone Marrow Transplantation with Division of Pneumology, Mildred Scheel Cancer Career Centre HaTriCs4, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

⁷ University Hospital Waterford, Waterford, Ireland

⁸ Division of Health Research, Faculty of Health and Medicine, Lancaster University, Lancaster, United Kingdom

⁹ Department of Dermatology, University Hospital Tübingen, 72076 Tübingen, Germany

¹⁰ Portuguese Air Force Health Care Direction, 1649-020 Lisbon, Portugal

¹¹ Medical Oncology, Hospital Ramón y Cajal. IRYCIS. Alcalá University, Madrid, Spain

¹² Department of Medical Oncology, U.O. Clinica di Oncologia Medica, IRCCS Ospedale Policlinico San Martino, Genova, Italy

¹³ Department of Internal Medicine and Medical Sciences (DiMI), School of Medicine, University of Genova, Genova, Italy

¹⁴ Department of Radiotherapy and Oncology, All India Institute of Medical Sciences, Jodhpur, India

¹⁵ Department of Internal Medicine III, University Hospital, LMU Munich and Comprehensive Cancer Center, Munich, Germany

¹⁶ Department of Medical and Radiation Oncology, Skåne University Hospital, Lund, Sweden

¹⁷ Division of Medical Oncology, Netherlands Cancer Institute, Amsterdam, The Netherlands

¹⁸ Gynaecology Unit, The Royal Marsden NHS Foundation Trust, London, United Kingdom

¹⁹ The Institute of Cancer Research, London, United Kingdom

1
2
3 **Corresponding author**
4

5 **Dr Susana Banerjee MA MBBS PhD FRCP**
6

7
8 The Royal Marsden NHS Foundation Trust and
9

10 Institute of Cancer Research

11 203 Fulham Road

12
13 London SW3 6JJ

14
15 United Kingdom
16
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19 Telephone: +44 (0)208 661 3563

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21 Email: susana.banerjee@rmh.nhs.uk
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HIGHLIGHTS

- ~~Four months into the COVID-19 pandemic~~ Compared to Survey I¹, more oncology professionals were at risk of poor well-being (33% vs 25%) and feeling burnout (49% vs 38%).
- Job performance since COVID-19 (JP-CV) has improved from 34% to 51%.
- About ~~one in five~~ 1 in 5 who tested positive for COVID-19 felt they had not been given adequate time to recover prior to return to work.
- 39% expressed concerns that COVID-19 would have a negative impact on their career development or training.
- More than two-thirds revealed that COVID-19 had changed their outlook on work-personal life balance.

ABSTRACT

Background

The COVID-19 pandemic has resulted in significant changes to professional and personal lives of oncology professionals globally. The ESMO Resilience Task Force collaboration aimed to provide contemporaneous reports on the impact of COVID-19 on the lived experiences and well-being in oncology.

Methods

This online anonymous survey (July-August 2020) is the second of a series of global surveys launched during the course of the pandemic. Longitudinal key outcome measures including well-being/distress (expanded Well-being Index (eWBI – 9 items)), burnout (1 item from eWBI) and job performance since COVID-19 (JP-CV) were tracked.

Results

942 participants from 99 countries were included for final analysis: 58% (n=544) from Europe, 52% (n=485) female, 43% (n=409) \leq 40 years old, and 36% (n=343) of non-white ethnicity. In July/August 2020, 60% (n=525) continued to report a change in professional duties compared to pre-COVID-19 era. The proportion of participants at risk of poor well-being (33%, n=310) and reported feeling burnout (49%, n=460) had increased significantly compared to April/May 2020 (25% and 38%, respectively; $p < 0.001$), despite improved JP-CV (34% vs 51%; $p < 0.001$). Of those who had been tested for COVID-19, 8% (n=39/484) tested positive; 18% (n=7/39) felt they had not been given adequate time to recover prior to return to work. Since the pandemic, 39% (n=353/908) had expressed concerns that COVID-19 would have a negative impact on their career development or training and 40% (n=366/917) felt that their job

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3 security had been compromised. More than two-thirds (n=608/879) revealed that COVID-19
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5 has changed their outlook on their work-personal life balance.
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10 **Conclusion**

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12 The COVID-19 pandemic continues to impact the well-being of oncology professionals globally
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14 with significantly more in distress and feeling burnout compared to the first wave. Collective
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16 efforts from both national and international communities addressing support and coping
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18 strategies will be crucial as we recover from the COVID-19 crisis. In particular, an action plan
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20 should also be devised to tackle concerns raised regarding the negative impact of COVID-19
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22 on career development, training, and job security.
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30 **Funding**

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32 European Society for Medical Oncology (ESMO)
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40 **KEYWORDS**

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42 Well-being

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48 Oncology professionals

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INTRODUCTION

The COVID-19 pandemic and our response to it continues to shape lives globally. Many healthcare workers have seen both their professional and personal lives significantly impacted, with the oncology community being no exception. The ESMO (European Society for Medical Oncology) Resilience Task Force, established in December 2019, launched a longitudinal series of global surveys in April/May 2020 (Survey I) and July/August 2020 (Survey II) to evaluate the challenges posed by COVID-19 on the daily practice and well-being of oncology professionals.¹ Preliminary results from our survey series indicate that COVID-19 has had a significant impact on the oncology workforce. Of the 1520 survey I participants, 25% were at risk of distress, 38% reported feeling burnout, and 66% reported not being able to perform their job compared with the pre-COVID era.¹ A higher mortality rate from COVID-19 in individual countries correlated with poorer well-being. Individual psychological resilience and changes in work hours were also consistent predictors. This is in keeping with emerging trends in several studies reporting increased psychological distress and emotional exhaustion in other studies of amongst healthcare workers, particularly with increased job demands, during this pandemic.²⁻⁵ Concerningly, amongst the 272 participants who completed both surveys I and II, a significant increase in risk of distress/poor well-being (22% versus 31%) and burnout (35% versus 49%) was already noted over a 3-month period during the pandemic despite improvements in job performance.¹

Here, we present the complete analysis of responses from all 942 participants of survey II of our global survey series.

METHODS

Survey design

Survey II (open from 16 July to 5 August 2020) formed part of the series of online global surveys designed by the ESMO Resilience Task Force, in collaboration with ESMO Young Oncologists Committee, ESMO Women for Oncology Committee, ESMO Leaders Generation Programme Alumni members, and the OncoAlert Network. The programme of work including this current survey was approved by the ESMO Executive Board. Participants were invited predominantly through ESMO membership emails, and open access to the survey, hosted on the Qualtrics platform, was also available to both members and non-members through the ESMO website and social media channels. Participation was voluntary and anonymous.

Survey measures

Key outcomes of interest including well-being, burnout and job performance since COVID-19 (JP-CV) were longitudinally monitored as per Survey I.¹ In brief, a calculated cumulative score of ≥ 4 on the validated expanded Well-being Index (eWBI) 9-item screening tool is considered at risk of poor well-being or distress.⁶ A 'yes' response to the single item from eWBI,^{1,7} 'have you felt burned out from your work?' was used as a surrogate for self-reported burnout amongst participants. JP-CV score of ≥ 3.5 was arbitrarily categorised as favourable JP-CV.¹

In addition, psychological resilience (single item 9-point bipolar scale, C. Hardy (unpublished data)), coping strategies, COVID-19-related job changes, perceptions of value and support, working environment, and changes to lifestyle were recorded. We also included contemporaneous questions relevant to participants' experiences during this period of the

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3 pandemic such as personal experience of COVID-19, perceptions of their career development
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5 and/or training and job security, and general outlook in life.
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10 **Statistical analysis**

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12 Key outcome variables including eWBI, burnout, JP-CV and psychological resilience were
13
14 longitudinally compared to the results from Survey 1¹ to determine any changes over time.
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16 Descriptive data were presented as median (interquartile range, IQR) or mean±standard
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18 deviation (SD), and proportions were expressed as a percentage. Chi-square analysis was
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20 used to compare categorical variables and paired or unpaired t-test were used to analyse
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22 continuous variables; p-values were two-tailed and were considered significant if <0.05.
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24 Participants who completed $\geq 33\%$ of the survey (completion of survey beyond personal
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26 demographic profile and with the four key outcome variables above recorded) were included
27
28 in the final analysis. All statistical analyses were performed using SPSS V.26.0 and data
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30 represented using GraphPad Prism V9.0.
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42 **RESULTS**

45 **Participant demographics**

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47 A total of 942 participants from 99 countries who completed $\geq 33\%$ of the online survey
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49 (n=816 (86.6%) with 100% completion) were included in the final analysis. By July/August
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51 2020, most participants (n=826, 87.7%) had experienced some form of lockdown/restriction
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53 in their region of work and only a minority (n=44, 4.7%) were working in a 'COVID-19-free'
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55 country. Table 1 summarises the key demographic characteristics of the participants.
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3 During the time of Survey II, responses were predominantly from Europe (n=544, 57.7%) with
4 the highest representation from those working in medical oncology (n=634, 67.3%) and those
5 working in a general hospital (n=421, 44.1%) or tertiary cancer centre (n=368, 39.1%) (Table
6 1). More than half of the participants were female (n=485, 51.5%), over 40 years old (n=533,
7 56.6%), and of white ethnicity (n=587, 62.3%) (Table 1). About 1 in 5 (n=184) were trainees,
8 and amongst those who were fully-trained oncologists, majority (n=437, 57.7%) had more
9 than 10 years of experience in the field (Table 1).
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23 **Changes in professional duties since COVID-19**

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25 In July/August 2020, the majority of participants (n=525/869, 60.4%) were still reporting a
26 change in their professional duties when compared to pre-COVID-19 era. The nature of
27 changes in professional duties are outlined in Table 2. There was a marked increase in remote
28 consultations (n=472/528, 89.4%), virtual multidisciplinary team/tumour board meetings
29 (n=450/534, 84.3%), remote meetings (n=506/550, 92.0%), and COVID-19-related research
30 activity (n=202/344, 58.7%) (Table 2). In particular, more than a third (n=221/575, 38.4%) had
31 reported an increase in overall hours of work in comparison to pre-COVID-19 work schedule
32 and about two-thirds (n=362/549, 65.9%) had reported an increase in hours working from
33 home (Table 2 and Supplementary Figure S1). The majority were still experiencing a reduction
34 in clinical trials (n=320/486, 65.8%) and other research (n=275/493, 55.8%) activities (Table
35 2). Overall, however, the self-reported job performance since COVID-19 (JP-CV) had increased
36 compared to April/May 2020; the proportion of those with JP-CV score ≥ 3.5 had increased
37 from 34.4% (n=523/1520) to 50.9% (n=444/873) in July/August 2020, $p < 0.001$.
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Personal experience of COVID-19

More than 1 in 5 participants (n=181/854, 21.2%) disclosed that their current circumstance or underlying comorbidities would put them at an increased personal risk of being seriously ill from COVID-19 (Table 3). Amongst those who had been tested (n=484), 39 participants (8.1%) had had COVID-19. Most underwent isolation or sick leave due to COVID-19 symptoms (n=25/39, 64.1%). Within this subgroup who had had COVID-19, the median duration of symptomatic COVID-19 was 8.5 days (n=22, range 1 to 42 days). About 1 in 5 (n=7/39) did not feel they were given appropriate time to recover and 11 participants (28.2%) did not feel completely recovered upon return to work. Notably, 14.8% (n=126/849) revealed that they have had a colleague who has died from COVID-19.

The impact of COVID-19 on perception of career development and training

As the COVID-19 pandemic evolved, we questioned participants regarding their outlook in their personal and professional life. Alarming, 38.9% (n=353/908) had expressed concerns that the pandemic would have a negative impact on their career development and/or training, and 39.9% (n=366/917) felt that COVID-19 has negatively impacted on their job security (Figure 1a-1b). Majority (n=650/861, 75.5%) were also concerned about the negative impact on international fellowship opportunities (Figure 1c).

The feeling of loss of control and helplessness during the COVID-19 crisis

During the course of the COVID-19 pandemic, more than a third of participants (n=339/859, 37.5%) had experienced a loss of control or felt helpless in meeting the expectations of their patients (Figure 1d). Similarly, more than a quarter also expressed the perception of loss of control or helplessness in meeting the expectations of their colleagues, supervisor and/or

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3 employer (Figure 1d). Additionally, more than half feeling loss of control or helpless with
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5 regards to pursuing their career goal (n=458/866, 52.9%) (Figure 1e).
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10 On personal reflection, for more than two-thirds of participants (n=608/879, 69.2%), the
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12 COVID-19 pandemic had changed their outlook on work-personal life balance (Figure 1f). A
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14 majority (n=612/870, 70.3%) would like to dedicate more time to their personal life, however
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16 only less than a third (n=271/863, 31.4%) felt that a change in their work-personal life balance
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18 could be easily achievable (Figure 1f). Currently, 43.0% (n=405/942) of participants did not
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20 feel that their work schedule leaves them enough time for their personal and family life.
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28 **Well-being and burnout**

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30 Among participants, 32.9% (n=310) were at risk of poor well-being (eWBI score ≥ 4) and 48.8%
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32 (n=460) reported feeling burnout compared to 25% (p<0.001) and 38% (p<0.001) of the 1520
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34 participants surveyed in April/May 2020, respectively. The magnitude of increase in both of
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36 these outcome measures were also seen within the subgroup of 272 participants who
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38 responded to both Surveys I and II.¹
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45 **Resilience, well-being support and coping strategies**

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47 Collectively, there was no difference in psychological resilience amongst participants in both
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49 Surveys I and II: mean score 6.4 ± 1.9 versus 6.4 ± 2.0 , respectively (p=0.82). Access to well-
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51 being support services was available to less than half of the participants (n=421, 44.7%).
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53 Supplementary Table S1 summarises a variety of well-being support services and coping
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55 strategies commonly used by participants during this COVID-19 pandemic. Importantly,
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57 majority continued to feel well-supported by their friends and/or family (n=729/835, 87.3%)
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3 and by their colleagues at work (n=648/835, 77.6%). In Survey II, 63.9% (n=537/841) and
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6 53.7% (n=452/841) expressed feeling valued by the public and their work organisation,
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8 respectively.
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10 11 12 13 14 15 **DISCUSSION** 16

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18 Within a three-month period (April/May 2020 to July/August 2020) at the beginning phase of
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20 the COVID-19 pandemic, Survey II has already highlighted a significant increase in risk of poor
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22 well-being (33% versus 25%) and burnout (49% versus 38%). This is despite significant
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24 improvement in self-reported job performance over the same timeframe time period. This is
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26 an alarming finding and suggests that although oncology professionals may be adapting
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28 effectively to change, they continue to be at increasing risk of distress.
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35 Survey II highlights a number of factors in the current climate that may be contributing to this
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37 deterioration in well-being. Most participants (n=826, 88%) had experienced some form of
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39 lockdown/restriction in their region of work. In addition to such significant imposed changes
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41 in their personal lives, around 60% of participants continued to report a change in
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43 professional duties. Some of these, such as an increase in remote consultations and virtual
44
45 meetings, have their advantages.^{4,8} However, nearly 40% had reported an overall increase in
46
47 their work hours compared to their pre-COVID-19 schedule (also see supplementary Figure
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49 S1). The majority had also experienced a reduction in clinical trials and traditional oncology-
50
51 focused research activity. These are an integral part of working life in oncology and often a
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53 source of meaning. Increased working hours and a reduction in activities that are
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55 professionally meaningful are well-known risk factors for burnout.⁹
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3 More Survey II participants had reported a close personal experience with COVID-19 either
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5 by testing positive for SARS-CoV-2 (8%) or requiring self-isolation or sick leave due to COVID-
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7 19 symptoms (18%). Worryingly, nearly 15% had had a colleague die from COVID-19.
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9 Furthermore, one in five participants also disclosed that they had underlying comorbidities
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11 that would put them at an increased personal risk of being seriously ill from COVID-19. Of
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13 those who have had COVID-19, the median duration of symptomatic COVID-19 was 8.5 days
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15 but notably, the range for this was broad, from 1 to 42 days. Importantly, 18% feel that they
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17 did not have enough time to recover from illness and close to 30% did not feel completely
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19 recovered from illness prior to returning to work. Given the reports of potential substantial
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21 long-term morbidity associated with COVID-19 ('long COVID'),^{10,11} this is particular cause for
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23 concern and will require careful ongoing monitoring.
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33 A substantial number of participants had expressed significant uncertainty about the future
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35 of their professional lives. Approximately 40% felt that COVID-19 would have a negative
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37 impact on their career development, training, and job security. Over 75% were also concerned
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39 about the negative impact on international fellowship opportunities, an important facet of
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41 professional development in oncology. This ties in with a recurrent concern expressed by
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43 participants of loss of control or helplessness in achieving their career goals (53%).
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50 Anxiety and fear amongst healthcare workers can be associated with higher rates of burnout.⁴
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52 Delays in patient care and treatment have been a substantial source of distress in other
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54 studies for oncology practitioners.⁴ These are understandable responses in a climate of crisis
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56 and prolonged uncertainty as has been noted during previous pandemics.³ Overall, our
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58 findings highlight significantly increasing rates of distress and burnout. The rapidity in the
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3 rates of increased burnout distress within a three-month period is a notable finding and a
4 major cause for concern. This may be an ominous harbinger of what lies ahead in ongoing
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6 and future ESMO Resilience Task Force surveys which have coincided with periods of
7
8 extended lockdown and further 'waves' of cases and deaths. The time for action therefore is
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10 now. Survey II already highlights useful areas of support and immediate intervention that may
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12 be of benefit to oncology professionals globally.
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20 Firstly, there are significant measures organisations can take to improve the well-being of
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22 staff. Enhanced mentorship of practitioners to ensure ongoing support for career
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24 development and planning as well as sourcing of suitable professional opportunities. Despite
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26 the focus on the COVID-19 response, ongoing investment in oncology-focused research and
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28 clinical trials need to continue, including fostering transnational fellowship opportunities.¹²⁻¹⁴
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30 More particularly, despite additional pressures, the accessible and continued support of
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32 supervisors for trainees is even more paramount. A routinely scheduled time for a "team
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34 huddle" or debriefing program for all staff in the emergency department has been shown to
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36 be well-received and beneficial for both junior and senior team members alike during these
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38 challenging times.¹⁵
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47 Secondly, the personal impact of COVID-19 on the health and well-being of oncology
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49 professionals have been emphasised by the findings of Survey II. Ensuring safe work
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51 conditions, including access to personal protective equipment, COVID-19 testing, and
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53 vaccination are paramount.^{16,17} Also ensuring the provision of adequate sick leave for self-
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55 isolation and recovery from symptoms should be mandated, as well as, supporting "shielding"
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57 practices to ensure those with comorbidities are in lower risk activities or exposure sites. The
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3 number of participants who had experienced the death of a colleague also raises the need for
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5 adequate access to bereavement support. Participants had similarly highlighted that access
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7 to counselling/psychological services and other resources to promote well-being and coping
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9 strategies would be welcomed.
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15 Of importance for future oncology workforce planning, the majority of participants had
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17 reported changing their outlook on their work-personal life balance as a result of the COVID-
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19 19 pandemic, including a desire for better work-life balance. The majority supported flexible
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21 working hours, including working from home. Ensuring work hours and workplace flexibility
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23 as well as encouraging staff to take annual leave are important organisational leadership
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25 measures.
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32 Although we focus on the solutions necessary, participants had likewise shared a number of
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34 strategies they were already using to cope currently, such as tapping into personal and
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36 professional support networks, employing strategies such as mindfulness meditation and
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38 smartphone apps, and feeling valued by their organisation. Supportive interventions need to
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40 be multi-faceted with workplaces, and national and international oncology societies such as
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42 ESMO and American Society of Clinical Oncology (ASCO)¹⁸ playing a key facilitative role.
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50 A significant strength of Survey II is our substantial participant size of 942 and scope with 99
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52 countries being represented. Over a third of our participants were from Germany, India,
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54 United Kingdom, Italy, Spain and Brazil – a number of these countries have borne the brunt
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56 of global morbidity and mortality, which makes their representation in this survey important
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58 and notable. There was even representation across the genders (52% female), as well as
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3 young oncologists (43%), current trainees (20%), and those of non-white ethnicity (36%), as
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5 our previous research and that of other groups have found these groups to be at particularly
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7 heightened risk of experiencing burnout.^{1,19,20} More than a third of participants were of non-
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9 white ethnicity, which is again an important aspect as studies have shown that those of black
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11 or minority ethnic backgrounds are at higher risk of complications from COVID-19.²¹
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18 A key factor in the well-being of all during these times has been the response of individual
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20 nations to this pandemic. Only a small minority of participants in our survey (4%) were from
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22 'COVID-19-free' nations which reflects their smaller population size. Our ability to discern the
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24 difference in well-being between those in higher prevalence versus COVID-19-free regions
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26 has been limited by this small sample size. This is also a cross-sectional, observational study
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28 which limits our ability to infer causality. However, to our knowledge, this is the only survey
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30 series in oncology addressing well-being systematically and longitudinally throughout the
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32 course of the COVID-19 pandemic. A substantially larger dataset from the recently closed
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34 Survey III and more detailed longitudinal statistical analyses of factors associated with well-
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36 being, burnout and distress will provide further insight into navigating recovery plans going
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38 forwards. The collective experience shared by participants completing this survey series, and
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40 the ongoing work of the ESMO Resilience Taskforce and other organisations will help direct
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42 efforts to support the well-being of oncology professionals globally.
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Contributors

K.H.J.L., K.M., K.K., K.P., C.O., M.O.C., J.B.A.G.H., C.H. and S.B. conceived and designed the study. K.H.J.L. and E.T. analysed the data. All co-authors were involved in data interpretation. K.H.J.L. produced the manuscript figures and tables. K.H.J.L., K.M. and S.B. wrote the first draft of the paper. All co-authors contributed to reviewing and editing drafts of the paper. K.H.J.L., K.M. and S.B. were involved in the final reviewing and editing of the paper and approving the manuscript.

Acknowledgements

We would like to thank all participants for taking part, and national societies and organizations who helped distribute the survey. We would also like to thank Francesca Longo, Mariya Lemosle and Katharine Fumasoli from the ESMO Head Office for providing vital administrative support for the delivery of this study.

Funding

European Society for Medical Oncology (ESMO): For license to use Qualtrics (online survey platform), and publication of figure fee.

Disclosure

K.H.J.L. is currently funded by the Wellcome-Imperial 4i Clinical Research Fellowship, and reports speaker honorarium from Janssen, outside the submitted work.

K.P.'s institution received speaker fees or honoraria for consultancy/advisory roles from Astra Zeneca, Eli Lilly, Gilead Sciences, Medscape, MSD, Novartis, Pfizer, Pierre Fabre, Hoffmann La Roche, Mundi Pharma, PharmaMar, Teva, Vifor Pharma; KP's institution received a research grant from Sanofi; KP received travel support from Astra Zeneca, Novartis, Pfizer, PharmaMar and Roche; all outside the submitted work.

C.O. reports research funding and honoraria from Roche; travel grant and honoraria from Medac Pharma and Ipsen Pharma; and travel grant from PharmaMar; outside the submitted work.

T.A. reports personal fees from Pierre Fabre and CeCaVa; personal fees and travel grants from BMS; grants, personal fees and travel grants from Novartis; and grants from Neracare, Sanofi and SkylineDx; all outside the submitted work.

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2
3 P.G. reports personal fees from Roche, MSD, BMS, Boehringer-Ingelheim, Pfizer, AbbVie,
4 Novartis, Lilly, AstraZeneca, Janssen, Blueprint Medicines, Takeda, Gilead, and ROVI, outside
5 the submitted work.
6
7

8
9 M.L. acted as a consultant for Roche, AstraZeneca, Lilly and Novartis, and received honoraria
10 from Theramex, Roche, Novartis, Takeda, Pfizer, Sandoz, and Lilly, outside the submitted
11 work.
12

13
14 C.B.W. reports speaker honoraria, travel support and advisory board: Bayer, BMS, Celgene,
15 Roche, Servier, Shire/Baxalta, RedHil, and Taiho; speaker honoraria from Ipsen; and advisory
16 board in GSK, Sirtex, and Rafael; outside the submitted work.
17
18

19
20 J.B.A.G.H. reports personal fees for advisory role in Neogene Tx; grants and fees paid to
21 institution from BMS, MSD, Novartis, BioNTech, Amgen; and fees paid to institution from
22 Achilles Tx, GSK, Immunocore, Ipsen, Merck Serono, Molecular Partners, Pfizer,
23 Roche/Genentech, Sanofi, Seattle Genetics, Third Rock Ventures, Vaximm; outside the
24 submitted work.
25
26

27
28 C.H. reports being Director of a private company Hardy People Ltd., outside the submitted
29 work.
30

31
32 S.B. reports research grant (institution) from AstraZeneca, Tesaro and GSK; honoraria from
33 Amgen, AstraZeneca, MSD, GSK, Clovis, Genmab, Merck Serono, Mersana, Pfizer, Seattle
34 Genetics, and Tesaro; outside the submitted work.
35
36

37
38 K.M., K.K., M.O.C., E.T., B.D., and G.M. have nothing to disclose.
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REFERENCES

1. Banerjee S, Lim KHJ, Murali K, *et al.* The impact of COVID-19 on oncology professionals: results of the ESMO Resilience Task Force survey collaboration. *ESMO Open* 2021; **6**(2): 100058.
2. Ng KYY, Zhou S, Tan SH, *et al.* Understanding the Psychological Impact of COVID-19 Pandemic on Patients With Cancer, Their Caregivers, and Health Care Workers in Singapore. *JCO Glob Oncol* 2020; **6**: 1494-509.
3. Barello S, Caruso R, Palamenghi L, *et al.* Factors associated with emotional exhaustion in healthcare professionals involved in the COVID-19 pandemic: an application of the job demands-resources model. *Int Arch Occup Environ Health* 2021.
4. Yao KA, Attai D, Bleicher R, *et al.* Covid-19 related oncologist's concerns about breast cancer treatment delays and physician well-being (the CROWN study). *Breast Cancer Res Treat* 2021; **186**(3): 625-35.
5. Marton G, Vergani L, Mazzocco K, Garassino MC, Pravettoni G. 2020s Heroes Are Not Fearless: The Impact of the COVID-19 Pandemic on Wellbeing and Emotions of Italian Health Care Workers During Italy Phase 1. *Front Psychol* 2020; **11**: 588762.
6. Dyrbye LN, Satele D, Shanafelt T. Ability of a 9-Item Well-Being Index to Identify Distress and Stratify Quality of Life in US Workers. *J Occup Environ Med* 2016; **58**(8): 810-7.
7. Dyrbye LN, Satele D, Sloan J, Shanafelt TD. Utility of a brief screening tool to identify physicians in distress. *J Gen Intern Med* 2013; **28**(3): 421-7.
8. Hoffman KE, Garner D, Koong AC, Woodward WA. Understanding the Intersection of Working from Home and Burnout to Optimize Post-COVID19 Work Arrangements in Radiation Oncology. *Int J Radiat Oncol Biol Phys* 2020; **108**(2): 370-3.
9. Murali K, Makker V, Lynch J, Banerjee S. From Burnout to Resilience: An Update for Oncologists. *Am Soc Clin Oncol Educ Book* 2018; **38**: 862-72.
10. Venkatesan P. NICE guideline on long COVID. *Lancet Respir Med* 2021; **9**(2): 129.
11. Shah W, Hillman T, Playford ED, Hishmeh L. Managing the long term effects of covid-19: summary of NICE, SIGN, and RCGP rapid guideline. *BMJ* 2021; **372**: n136.
12. Bakouny Z, Hawley JE, Choueiri TK, *et al.* COVID-19 and Cancer: Current Challenges and Perspectives. *Cancer Cell* 2020; **38**(5): 629-46.
13. Morgan G, Lambertini M, Kourie HR, *et al.* Career opportunities and benefits for young oncologists in the European Society for Medical Oncology (ESMO). *ESMO Open* 2016; **1**(6): e000107.
14. Morgan G, de Azambuja E, Punie K, *et al.* OncoAlert Round Table Discussions: The Global COVID-19 Experience. *JCO Glob Oncol* 2021; **7**: 455-63.

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15. Azizoddin DR, Vella Gray K, Dundin A, Szyld D. Bolstering clinician resilience through an interprofessional, web-based nightly debriefing program for emergency departments during the COVID-19 pandemic. *J Interprof Care* 2020; **34**(5): 711-5.
 16. Curigliano G, Banerjee S, Cervantes A, *et al.* Managing cancer patients during the COVID-19 pandemic: an ESMO multidisciplinary expert consensus. *Ann Oncol* 2020; **31**(10): 1320-35.
 17. Garassino MC, Vyas M, de Vries EGE, *et al.* The ESMO Call to Action on COVID-19 vaccinations and patients with cancer: Vaccinate. Monitor. Educate. *Ann Oncol* 2021; **32**(5): 579-81.
 18. Hlubocky FJ, Symington BE, McFarland DC, *et al.* Impact of the COVID-19 Pandemic on Oncologist Burnout, Emotional Well-Being, and Moral Distress: Considerations for the Cancer Organization's Response for Readiness, Mitigation, and Resilience. *JCO Oncol Pract* 2021: OP2000937.
 19. Banerjee S, Califano R, Corral J, *et al.* Professional burnout in European young oncologists: results of the European Society for Medical Oncology (ESMO) Young Oncologists Committee Burnout Survey. *Ann Oncol* 2017; **28**(7): 1590-6.
 20. Torrente M, Sousa PA, Sanchez-Ramos A, *et al.* To burn-out or not to burn-out: a cross-sectional study in healthcare professionals in Spain during COVID-19 pandemic. *BMJ Open* 2021; **11**(2): e044945.
 21. Sze S, Pan D, Nevill CR, *et al.* Ethnicity and clinical outcomes in COVID-19: A systematic review and meta-analysis. *EClinicalMedicine* 2020; **29**: 100630.

TABLE CAPTIONS

Table 1 Participant demographics (n=942).

Table 2 Overview of the changes in professional duties since the COVID-19 outbreak (n=942).

Table 3 Participants' personal experience of COVID-19 (n=854)

FIGURE CAPTIONS

Figure 1 The impact of COVID-19 on (a- c) the perception of career development and/or training opportunities (n=925), (d-e) sense of control (n=892), and (f) future outlook in work/personal life balance (n=892).

Figure 2 Summary of key suggestions from participants on well-being and coping strategies which might be helpful as part of the COVID-19 recovery plan (n=827).

SUPPLEMENTARY DATA

Table S1 Well-being support and coping strategies amongst participants during the COVID-19 crisis (n=942).

Figure S1 Comparison of self-reported working hours amongst participants during Survey I (16 April to 3 May 2020) (n=1520) and Survey II (16 July to 5 August 2020) (n=872).

Figure S2 Working environment during the COVID-19 pandemic in July/August 2020 (n=846).