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ORIGINAL RESEARCH

The Impact of the COVID-19 Pandemic on Work-Life Integration of Physician Assistants in Oncology

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Authors' disclosures of conflicts of interest are found at the end of this article.

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Abstract

Introduction: The COVID-19 pandemic led to rapid changes in the delivery of oncology care. Studies examining the impact of the pandemic on the oncology workforce are largely limited to oncologists and nurses. This study was conducted to explore how the COVID-19 pandemic impacted the oncology physician assistant (PA). **Methods:** A survey of oncology PAs was conducted in the fall of 2020. Multiple choice items and two open-ended questions explored how the COVID-19 pandemic may have impacted clinical practice. Burnout was assessed using the Maslach Burnout Inventory. **Results:** Most participants worked in an academic center (63.7%), in medical oncology (73.3%), and in the outpatient setting (70.5%). Telemedicine was performed by 77.5% of PAs, and 34.7% of PAs reported being assigned to help cover other departments/specialties. Physician assistants performing telemedicine were found to have higher rates of burnout compared to those that did not perform telemedicine (47.3% vs. 15.6%; p = .0013). Surprisingly, burnout was significantly lower for PAs who were redeployed during the pandemic compared to those who were not (28.0% vs. 46.8%; p = .0285). There was no correlation in the rates of burnout based on changes in hours worked, base pay, bonus pay, continuing medical education funding, or working remotely. **Conclusion:** The COVID-19 pandemic resulted in significant operational and workforce changes, which dramatically impacted the oncology PA. As the health-care landscape continues to adjust following the COVID-19 pandemic, future research should focus on the delivery of telemedicine to help identify opportunities to optimize this aspect of clinical practice and minimize the risk of burnout.

With the onset of the COVID-19 pandemic, the entire global health-care system faced challenges not previously encountered within our current lifetime. The challenges in oncology were especially difficult, as patients with active cancer were at a higher risk of morbidity and mortality from COVID-19 due to both general factors such as increasing age and number of comorbidities, as well as cancer-specific factors such as performance status and an immunocompromised state due to active cancer (Kuderer et al., 2020). As a result, rapid changes in the delivery of oncology care were made, including the adoption of telemedicine services, modifications of workflows and schedules, and development of mitigation strategies to reduce the spread of COVID-19 (Granek & Nakash, 2022; Hlubocky et al., 2021).

Numerous studies have examined the impact of the COVID-19 pandemic on the oncology workforce but are largely limited to oncologists or nursing disciplines without specifically examining the impact on physician assistants (PAs) or nurse practitioners (NPs; Banerjee et al., 2021; Hlubocky et al., 2021; Lim et al., 2021; Moerdler et al., 2021). In these studies, burnout and moral distress were found to be significantly increased as a result of the pandemic, and higher levels of anxiety, depression, and irritability were reported (Hilmi et al., 2020; Hlubocky et al., 2021; Thomaier et al., 2020). Undoubtedly, oncology PAs and NPs were also negatively impacted by the COVID-19 pandemic, but to what degree is largely unknown. It is likely that PAs and NPs were uniquely impacted by the health-care system's response to managing the COVID-19 pandemic compared to other members of the health-care team. Due to the nature of their training as generalists, PAs and NPs may have been preferentially redeployed, that is, transferred to a different department, to help cover other specialties and areas within the health-care system (Warner et al., 2013). In addition, since PAs and NPs are integral to the delivery of team-based care in oncology, the changes to operational workflows and adoption of telemedicine services may have put them at significant risk of distress in ways that differed from other members of the oncology team.

The aim of this study was to explore how the COVID-19 pandemic in the United States impacted the oncology PA workforce. With a better understanding of how PAs were utilized during the COVID-19 pandemic and how they responded to the increased burdens, opportunities to refine and improve the effectiveness of team-based care in oncology may be pursued.

METHODS

Participants and Survey Administration

Potential participants for the study were identified from the membership database of the Association of PAs in Oncology (APAO). Physician assistants were invited by email to participate in the study. The study was limited to PAs in the specialty of oncology, and all participants must have worked as a clinically practicing PA in the previous 12 months of completing the survey to participate. The study was initiated in October 2020 with all responses received by December 2020. This study was approved by the Fox Chase Cancer Center Institutional Review Board. Physician assistants invited to participate in the study were required to provide informed consent prior to participation.

Survey Dimensions: COVID-19 Pandemic, Clinical Practice, and Work-Life Integration

Survey items were developed to explore the impact of the COVID-19 pandemic on the oncology PA workforce, including how the COVID-19 pandemic impacted PA clinical practice, led to clinical redeployment, interfered with patient and clinical team communication, and disrupted PA work-life integration. In total, 31 multiple choice items and two open-ended questions on "steps your team has taken to improve communication during the pandemic" and "other thoughts, challenges, or personal reflections on what it has been like to work during the COVID-19 pandemic" were included in the survey.

Burnout

Given the increased burden and stress related to the pandemic, the presence of burnout was anticipated to be high. Assessment of oncology PA burnout was accomplished using the Maslach Burnout Inventory (MBI). Widely considered as the gold standard for the assessment of burnout in health-

care providers, the MBI has been used to examine burnout among PAs and NPs both within and without the specialty of oncology (Bourdeanu et al., 2020; Halasy et al., 2021; Tetzlaff et al., 2018; Tetzlaff et al., 2022). The key dimensions related to burnout are examined with three subscales: emotional exhaustion, depersonalization, and sense of personal accomplishment. The MBI includes a total of 22 items for the complete assessment. Each subscale of the MBI is calculated and can be categorized into high, moderate, and low levels using established cut scores (Maslach, 2018). Consistent with prior reporting, a high score on the emotional exhaustion subscale (≥ 27) and/or a high score on the depersonalization subscale (≥ 10) was used to define professional burnout (Tetzlaff et al., 2018; Tetzlaff et al., 2021, 2022; West et al., 2020).

Statistical Analysis

Standard descriptive statistics were used to describe the personal and professional characteristics of the oncology PAs. Comparisons between burnout and responses related to the COVID-19 pandemic were examined with Fisher's exact tests and Chi-square tests for categorical variables. The Cochran-Armitage trend test was used to assess the association of burnout with ordinal variables. For questions regarding perceptions of the impact of the pandemic on communication and timely care, means and standard errors of the Likert responses by burnout status were calculated assuming equal spacing (strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree). Statistical analyses were performed using SAS, version 9.4 (SAS Institute, Cary, NC). The jittered scatter plot was created using Stata Statistical Software: Release 15 (College Station, TX).

RESULTS

Participants

One hundred and forty-six PAs consented to participate in the study, completed the MBI, and have been included in the full analysis. Participants in the study were mostly female (90.4%), white/Caucasian (83.6%), married/partnered (78.1%), and with a mean age of 41 years. Most participants worked primarily in an academic medical center (63.7%) in the subspecialty of medical oncology (73.3%) and in the outpatient setting (70.5%). Overall, participants had an average of 13 years of experience as a PA in any setting and 10.6 years as a PA in oncology (Table 1).

Oncology PA Workforce and the COVID-19 Pandemic

As a result of the pandemic, 27.8% of participants reported an increase in the number of hours worked per week. Only 10.4% reported working fewer hours. Most participants reported that they did not receive any increase in their base pay, bonus, or continuing medical education (CME) funding (85.4%, 66.7%, and 82.2%, respectively). However, for some, there was a decrease in salary, bonus pay, or CME funding (7.6%, 24.3%, and 17%, respectively; Table 2).

Due to the COVID-19 pandemic, there were several notable changes to the role and function of the PA in oncology. Telemedicine visits were performed by 77.5% of PAs at this point in the COVID-19 pandemic, and 34.7% of PAs reported being tasked to help cover other departments or specialties. In addition, over half (53.5%) of the PAs in the study reported working from home. Of those who reported working from home, the majority (72.8%) reported working less than or equal to 40% of the time from home. Only 11.7% reported working more than 60% of their time from home.

As anticipated, there were disruptions to clinical operations and patient care due to the COVID-19 pandemic. Forty-two percent of PAs agreed that communication with patients and families was negatively impacted due to the COVID-19 pandemic. A lesser impact was noted for communication within the clinical team, as only 19.7% of PAs felt that a negative impact was present in this area. Common themes identified from the open-ended questions concerning team communication included increased reliance on email and texting, increased frequency of team meetings and huddles (in-person and virtual), and increased communication through the electronic medical records (Table 3).

Oncology PA Burnout

Overall, 39.7% of PAs reported professional burnout as manifested by either high levels of emotional exhaustion and/or depersonalization on one of the MBI subscales. There was no correlation in the rates of burnout based on changes in hours

Table 1. Personal and Professional Characteristics of Participants (*n* = 146)

	n	%
Age, years		
Mean (Std dev)	41.0 (10.3)	
Median (IQR)	40.0 (33–47)	
Gender		
Female	132	90.4
Male	14	9.6
Ethnicity		
White/Caucasian	122	83.6
Asian	9	6.2
Black/African American	6	4.1
Hispanic/Latinx	5	3.4
Mixed	2	1.4
Prefer not to answer	2	1.4
Relationship		
Married/Partnered	114	78.1
Single	20	13.7
Divorced/Widowed	11	7.5
Prefer not to answer	1	0.7
Years as a PA in any setting		
Mean (Std dev)	13.0 (9.0)	
Median (IQR)	12.0 (5-18)	
Years as a PA in oncology		
Mean (Std dev)	10.6 (7.4)	
Median (IQR)	8.0 (5–16)	
Primary practice setting		
Inpatient	23	15.8
Outpatient	103	70.5
Both/Flex between	20	13.7
Practice type		
Academic medical center	93	63.7
Hospital owned, private practice	22	15.1
Physician owned, private practice	23	15.8
Other	8	5.5
Subspecialty		
Medical oncology	107	73.3
Surgical oncology	3	2.1
Radiation oncology	12	8.2
Other	24	16.4
Hours worked per week		
≤ 30	10	6.8
31–40	47	32.2
41–50	68	46.6
> 50	21	14.4

Note. Std dev = standard deviation; IQR = interquartile.

worked, base pay, bonus pay, or CME funding. Interestingly, PAs who were redeployed during the pandemic were found to have lower rates of burnout (28.0%) compared to the rate of burnout of 46.8% reported by PAs not redeployed (p = .0285). Physician assistants performing telemedicine visits also had higher rates of burnout compared to those who did not (47.3% vs. 15.6%; p = .0013). When work from home was examined, there was no difference in the rate of burnout for those who worked from home compared to those who did not, nor was there a difference based on the percentage of time working from home (Table 2).

Associations between communication and burnout were also examined. The rates of burnout for PAs who "strongly agreed" or "agreed" that communication with patients and family members had been negatively impacted due to the COVID-19 pandemic were 52.9% and 55.8%, respectively. This is significantly higher than the rates of 27.3% and 25.5% for PAs who "strongly disagreed" or "disagreed" with the statement (p = .0028). Similarly, rates of burnout were higher for PAs who "agreed" that communication within the team was negatively impacted by the COVID-19 pandemic (Figure 1 and Table 3).

Reflections on the Pandemic

When PAs were asked to reflect on the impact of the COVID-19 pandemic, stress was one of the most common themes reported. Factors contributing to stress included concerns about job security, caring for family members, educating children, and increased job responsibilities. One PA noted, "The stress of caring for family and working is significant. I am homeschooling my children. My mother is now on supplemental oxygen after having COVID-19 pneumonia. These are stressors that are like nothing I have felt before." Another theme that emerged was a lack of or inability to engage in coping strategies, which negatively impacted PAs' work-life integration. For example, one PA noted, "I feel COVID-19 has increased feelings of burnout, mainly with not being able to find reprieve outside of work, not being able to travel, and feeling anxious about seeing family members at gatherings because of fear of spreading or getting COVID-19." Another PA noted, "I had a patient exposure, and we decided that it would be best for me to quarantine from my

Table 2. Changes in Clinical Role as a Result of the Pandemic

	All	Burned Out		
	***N* (%)**	***n***	**Rate, %**	***p* value[a]**
How have the following changed for you personally since COVID-19 emerged in the US?				
Hours worked				.14
Increased	40 (27.8)	19	47.5	
Remained the same	90 (62.5)	34	37.8	
Decreased	15 (10.4)	4	26.7	
Missing	1			
Base pay				.66
Increased	11 (7.6)	4	36.4	
Remained the same	123 (85.4)	48	39.0	
Decreased	11 (7.6)	5	45.5	
Missing	1			
Bonus				.5
Increased	14 (9.7)	7	50.0	
Remained the same	96 (66.7)	37	38.5	
Decreased	35 (24.3)	13	37.1	
Missing	1			
CME funding				.10[FE]
Increased	1 (0.7)	1	100.0	
Remained the same	116 (82.2)	42	36.2	
Decreased	24 (17.0)	12	50.0	
Missing	5			
Have you been asked to help cover other departments or specialties due to the pandemic?				.0285
No	94 (65.3)	44	46.8	
Yes	50 (34.7)	14	28.0	
Missing	2			
Have you performed telemedicine visits?				.0013
No	32 (22.5)	5	15.6	
Yes	110 (77.5)	52	47.3	
Missing	4			
Have you worked remotely during the pandemic?				.73
No	67 (46.5)	28	41.8	
Yes	77 (53.5)	30	39.0	
Missing	2			
What percentage of time have you worked remotely?[2]				.13
≤ 20%	40 (52.0)	17	42.5	
> 20% to ≤ 40%	16 (20.8)	7	43.8	
> 40% to ≤ 60%	12 (15.6)	5	41.7	
> 60% to ≤ 80%	5 (6.5)	1	20.0	
> 80%	4 (5.2)	0	0	
How has working from home affected your level of stress during the pandemic?[b]				.53
Increased my level of stress	31 (40.8)	13	41.9	
No impact on my level of stress	21 (27.6)	9	42.9	
Decreased my level of stress	24 (31.6)	8	33.3	
Missing	1			

Note. FE = Fischer's exact test.
[a]*P* value for association of burnout with COVID-19 changes from Armitage-Cochran trend test (for > 2 categories) or Chi-square test (2 categories).
[b]Only those reporting to have worked remotely.

Table 3. Burnout Rates by Impact of COVID-19 Pandemic on Communication With Patients, Within the Clinical Team, and Patient Outcomes

	Burned Out						
	All		No		Yes		
	N	%[a]	*n*	%[b]	*n*	%[b]	Trend *p* value
Communication with patients and family has been negatively impacted due to COVID-19							.0028
Strongly agree	17	11.9	8	47.1	9	52.9	
Agree	43	30.1	19	44.2	24	55.8	
Neither agree nor disagree	25	17.5	16	64.0	9	36.0	
Disagree	47	32.9	35	74.5	12	25.5	
Strongly disagree	11	7.7	8	72.7	3	27.3	
Missing	3		2		1		
Communication within my team about patient care has been negatively impacted due to COVID-19							.0263
Strongly agree	3	2.1	2	66.7	1	33.3	
Agree	25	17.6	13	52.0	12	48.0	
Neither agree nor disagree	24	16.9	9	37.5	15	62.5	
Disagree	69	48.6	44	63.8	25	36.2	
Strongly disagree	21	14.8	17	81.0	4	19.0	
Missing	4		3		1		
I am concerned that my patients have not received timely care or there may be worse outcomes due to COVID-19 (not directly due to acquiring COVID-19)							.2130
Strongly agree	11	7.7	8	72.7	3	27.3	
Agree	68	47.6	35	51.5	33	48.5	
Neither agree nor disagree	24	16.8	16	66.7	8	33.3	
Disagree	24	16.8	15	62.5	9	37.5	
Strongly disagree	16	11.2	12	75.0	4	25.0	
Missing	3		2		1		

Note. [a]Column percents.
[b]Row percents.

family to be safe. As a result, I had to watch my son's first birthday party via Zoom. It broke my heart." However, not all reflections were negative, as PAs also noted satisfaction in doing their work and helping others, while some also found significant strength from the support of their team. For example, one PA noted that it "felt good to be helping people, doing a job that is needed, and immensely grateful to have the daily support of my coworkers. Another participant noted, "I have never been supported and worked more as a whole, united team in caring for our patients."

DISCUSSION

The results from this study provide an overview of some of the issues and impact that the COVID-19 pandemic had on the oncology PA workforce. This study revealed that PAs in oncology were often redeployed to cover other departments or specialties. In addition, the majority of PAs were subject to operational changes such as performing telemedicine visits and working remotely. Although few PAs reported a decrease in the number of hours worked, PAs were not immune to the financial repercussions from the pandemic felt by many industries, as a small percentage of PAs reported decreases in salary, CME benefits, and bonuses.

Redeployment and Burnout

One of the findings from our study that warrants further discussion is the significantly lower rate of burnout for PAs who reported being redeployed

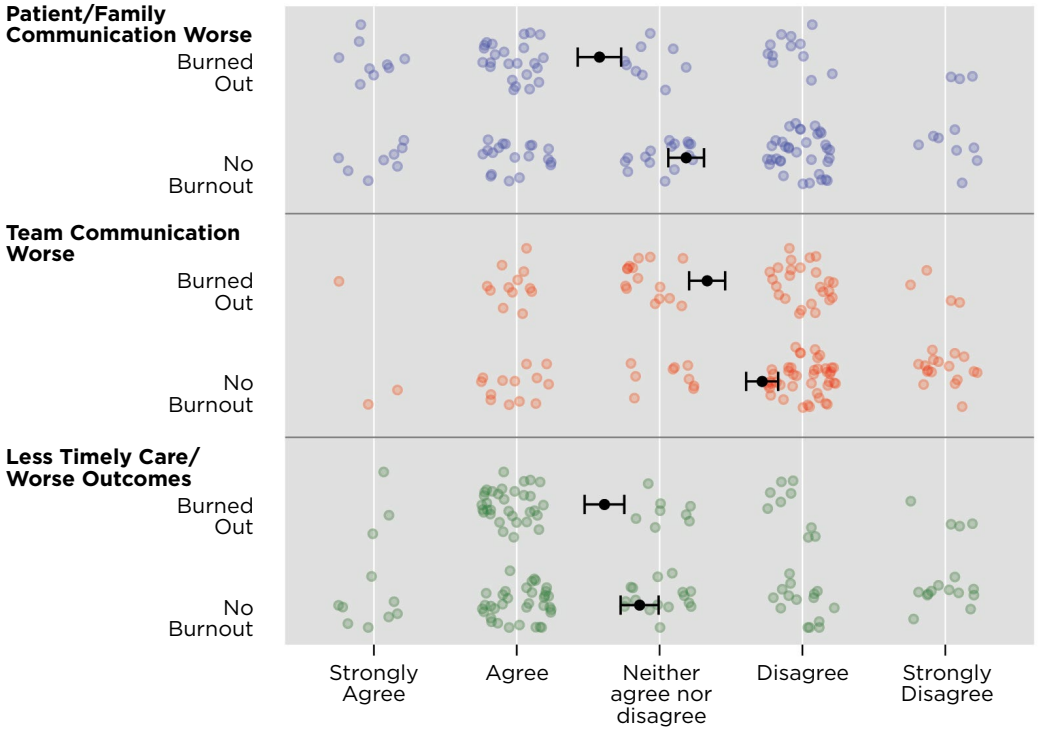

Figure 1. The perceptions of the COVID-19 pandemic on communication with patients and family, communication within the clinical team, and the impact on timely care for patients and the association with differences in provider burnout. The black markers represent the means and standard error bars of Likert responses with equal intervals by burnout status. Each colored dot (jittered) represents a participants' level of agreement with "Communication with patients and family has been negatively impacted due to COVID-19" (Top; Patient/Family Communication), "Communication within my team about patient care has been negatively impacted due to COVID-19 (Middle; Team Communication) and "I am concerned that my patients have not received timely care or there may be worse outcomes due to covid-19 (not directly due to acquiring COVID-19)" (Bottom; Timely Care). Providers with no burnout were more likely to disagree with statements on the negative impact of COVID-19 on communication with patients (p = .003) and communication within the team (p = .026) but not for timely care or worse outcomes (p = .22).

during the pandemic compared to PAs who were not redeployed (28.0% vs. 46.8%, p = .0285). One explanation for the lower rate of burnout in the current study is that PAs who were redeployed volunteered for the opportunity because they needed a change and in turn benefited from having a new role. It is estimated that up to half of PAs change specialties, and it has been suggested that burnout may be one cause of these career changes (Hooker et al., 2010; McGrath et al., 2021; Quella et al., 2021). It is also possible that the change in role due to redeployment led to greater purpose and meaning in their work resulting in increased professional engagement that mitigated the risk of burnout. It is also likely that PAs who were selected to be redeployed were identified, in part, based on their past work experiences and skills sets that matched the identified need of the department and health-care system. However, this would not necessarily explain the lower rate of burnout compared to other PAs in oncology who were not redeployed.

It is possible that PAs selected to be redeployed shared protective personal characteristics to help mitigate the stresses and occupational dynamics of being redeployed. For example, in a small study of PAs redeployed from their original specialty due to the COVID-19 pandemic, researchers showed a positive correlation between

grit (interest consistency and effort perseverance) and well-being. They also found a positive correlation between length of practice as a PA and total grit score (Capic et al., 2022). The relationship between grit and well-being has been reported in numerous physician studies. Further exploration may be warranted in PAs and NPs in oncology (Doolittle, 2021; Hewitt et al., 2021; Lee et al., 2021). If similar associations are identified in oncology PAs and NPs, an assessment of grit as a character trait may help identify employees at risk of burnout and help them gain access to and pursue resiliency skills training. However, such interventions and approaches should not supersede the far more important systems-level interventions that are needed to effectively address provider burnout.

Communication and Burnout

Another important finding from the study relates to the impact that COVID-19 had on perceived communications between oncology PAs and their patients, and to a lesser extent within their team. Physician assistants who perceived a negative impact on communication had significantly higher rates of burnout compared to PAs who did not. Given the significant amount of time that PAs and NPs in oncology may spend on coordination of care for oncology patients, it is not surprising that factors that negatively impact communication with patients would result in higher rates of burnout. It is also conceivable that the negative impact of communication with patients was not limited to the impact that communication barriers had on clinical workflow and delivery but also related to barriers in the development of meaningful connections with patients, which is a key driver of professional engagement.

Telemedicine and Burnout

Similarly, PAs who participated in telemedicine also reported higher rates of burnout compared to PAs who did not. It is possible that the rates of burnout were higher due to the need to develop new workflows for adapting telemedicine to clinical practice, inefficiencies in existing telemedicine processes and workflows, challenges with visits, and inadequate technology resources for both patients and providers. The types of visits conducted by telemedicine may have also impacted the high rate of burnout for PAs. In one study, palliative care providers reported multidimensional distress completing telemedicine visits during the pandemic due to feelings of disempowerment and competing loyalties (Rosa et al., 2023). It is possible that PAs had similar experiences in caring for patients with cancer via telemedicine.

This study was completed early in the course of the pandemic, and it is possible that some of the challenges involved in deploying telemedicine have improved and led to lower rates of burnout for PAs who participate in telemedicine. As the health-care landscape has changed due to the COVID-19 pandemic, it appears that telemedicine will remain one of the options for delivering care to patients with cancer. From the patient's perspective, telemedicine visits have been associated with a better experience compared to in-person visits with respect to access to care and provider concern. The satisfaction with telemedicine is also maintained over time (Patel et al., 2023). If that is the case, future research will be needed to understand how PAs and NPs in oncology are adapting to telemedicine and to help identify opportunities to improve the efficiency of care and well-being of the provider workforce that utilizes this method of remote care. It will also be important to explore opportunities to expand patient access to oncologic care and participation in clinical research through telemedicine services provided by PAs and NPs (Lichtenstein et al., 2023; Tsagkaris et al., 2023).

Limitations

We recognize that there are limitations of the current study. Notably, the study only involved PAs in oncology, and therefore the results may not be generalizable to NPs in oncology. However, given the similar roles of PAs and NPs in oncology, we suspect the impact of the COVID-19 pandemic would be similar (Bruinooge et al., 2018). Also, differences in PAs and NPs were not detected in other studies exploring the impact of the COVID-19 on the mental well-being of health-care workers or simply reported PAs and NPs in the same provider category (Croghan et al., 2021; DiMaggio et al., 2023; Kelker et al., 2021).

The study respondents are also predominantly PAs in medical oncology and may not be

representative of the experience of surgical PAs or other oncology specialties. This is notable given the significant number of elective surgeries that were delayed or cancelled as a result of the pandemic. The current study may also be limited by response bias and the small sample size. The risk of response bias would appear to be low as the characteristics of participants in the current study are similar to prior studies of oncology PAs and similar to the specialty profile of PAs in oncology reported by the National Commission on Certification of PAs (National Commission on Certification of Physician Assistants, 2020; Tetzlaff et al., 2018; Tetzlaff et al., 2021; Tetzlaff et al., 2022). We also acknowledge that the sample size may have limited the ability to detect smaller associations between variables.

CONCLUSIONS

The COVID-19 pandemic resulted in significant operational and workforce challenges. The job of the oncology PA was dramatically impacted, forcing many PAs to work in different areas of medicine and to work from home and learn to provide care via a new telehealth system. The association of rates of burnout with redeployment and telemedicine are of significant interest. Future research should focus on the delivery of telemedicine by oncology PAs and help identify opportunities to optimize this aspect of clinical practice. As the health-care landscape continues to adjust following the COVID-19 pandemic, it will be important to monitor the impact on oncology PAs and NPs and help identify opportunities to mitigate the risk of burnout. ●

Disclosure

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