

Burnout, Workplace Factors, and Intent to Leave Among Hematology/Oncology Nurse Practitioners

LAURA BOURDEANU,¹ NP, PhD, QIUPING (PEARL) ZHOU,² PhD, RN, MICHELLE DeSAMPER,³ KAITLIN ANNE PERICAK,⁴ MA, and ARLENE PERICAK,² FNP-BC, DA

From ¹American Sentinel University, Aurora, Colorado; ²George Washington University School of Nursing, Washington, DC; ³University of Central Florida, Orlando, Florida; ⁴University of Miami, Miami, Florida

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

Correspondence to: Laura Bourdeanu, NP, PhD, American Sentinel University, 2260 South Xanadu Way, Aurora, CO 80014.
E-mail: laura.bourdeanu@americansentinel.edu

<https://doi.org/10.6004/jadpro.2020.11.2.2>

© 2020 Harborside™

Abstract

Background: Burnout and intent to leave have been well documented in oncology/hematology health-care professionals, with a potentially detrimental effect on the patient-provider relationship and job satisfaction. With the recommended changes in the nurse practitioner (NP) role to accommodate for the physician shortage, it is important to determine the burnout and intent to leave of hematology/oncology NPs. **Purpose:** To examine the association between burnout, workplace factors, and intent to leave among hematology/oncology NPs. **Methods:** In this cross-sectional survey, a convenience sample of 201 hematology/oncology NPs was recruited to assess their burnout levels using the Maslach Burnout Inventory, workplace factors using the Areas of Worklife survey (AWS), and intent to leave. Descriptive, correlational, and logistic regression analyses were performed to examine the relationships among variables. **Results:** 44 (21.9%) participants reported intention to leave the profession or hematology/oncology. 30.8% of the sample reported a high level of emotional exhaustion, 9.0% reported high depersonalization, and 21.0% reported low personal accomplishment. Emotional exhaustion was related to increased likelihood of intent to leave in regression model (adjusted odds ratio [OR] = 1.10, 95% confidence interval [CI] = 1.05-1.17, $p < .001$). Workplace reward (adjusted OR = 0.4, 95% CI = 0.17-0.93, $p < .05$) and value (adjusted OR = 0.52, 95% CI = 0.28-0.99, $p < .05$) were negatively associated with intent to leave. **Conclusion:** Hematology/oncology NPs experience high emotional exhaustion, with over 20% indicating intent to leave their job or the nursing profession. Some workplace factors may play protective roles to reduce the intent to leave. Interventions are needed to enhance these workplace factors to decrease burnout.

As baby boomers reach the age of 65, the incidence of cancer is estimated to increase by 67% by 2030 (Smith, Smith, Hurria, Hortobagyi, & Buchholz, 2009). The American Society of Clinical Oncology has long recorded the growing need for oncologists to fill the ranks, as senior ones retire or leave due to burnout, and most recently reported that overall demand for oncologist services is projected to grow by 40%, while the supply of oncologists may grow by only 25% (Yang et al., 2014). In addition, nearly half (47%) of the reported vacancies are for medical oncologists (Association of Community Cancer Centers, 2017). Increasing the numbers and expanding the roles of advanced practitioners (APs), namely nurse practitioners (NPs) and physician assistants, is one of the proposed strategies to address the projected oncology workforce shortage (Kosty, Acheson, & Tetzlaff, 2015; Towle et al., 2011). However, health-care providers in oncology are considered to be at risk of burnout due to the constant emotional stress resulting from issues of patient death and dying.

The concept of burnout was originally developed by Herbert Freudenberger who defined it as a state of mental and physical exhaustion caused by one's job (Freudenberger, 1974). Maslach further developed this concept and determined that it comprises of emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (PA) that can occur among individuals who work with other people. Emotional exhaustion describes the depletion of energy for one's work. Depersonalization describes the detachment from persons served as evidenced by exhibiting impersonal or insensitive responses towards the persons served. Personal accomplishment encompasses the feelings of success in one's work (Maslach & Leiter, 2008).

The burnout rates and intent to leave among oncology health-care providers have been of increasing interest to researchers, as they are exposed to unique workplace factors that increase the risk of work stress, decreased job satisfaction, depersonalization of patients, as well as changing professions or retiring (Linzer, Sinsky, Poplau, Brown, & Williams, 2017). Among hematologists/oncologists, 44.7% report feelings of burnout, with high EE (38.3%), high DP (24.9%), and low PA

(13.2%; Shanafelt et al., 2014). Over a third of oncology physician assistants (34.8%) report feelings of burnout, with 30.4% having high EE, 17.6% high DP, and 19.6% having low PA (Tetzlaff, Hylton, DeMora, Ruth, & Wong, 2018). Among hematology/oncology nurses, 30% reported high EE, 15% high DP, and 35% low PA (Cañadas-De La Fuente et al., 2018). The levels of burnout in hematology/oncology NPs have not been determined, but 22.6% of primary care NPs report burnout (Edwards et al., 2018).

As the duties of hematology/oncology NPs are estimated to increase to meet the expected demand in oncology care, it is important to determine the current prevalence of burnout and intent to leave among these health-care providers. Although burnout and intent to leave among hematology/oncology nurses have been thoroughly studied, there are no studies evaluating these in hematology/oncology NPs, despite their differences in scope of practice and significant involvement in patient care. The purpose of this study was therefore to determine the prevalence of burnout and intent to leave in hematology/oncology NPs.

METHODOLOGY

Design

A cross-sectional survey study was conducted to evaluate the prevalence of burnout, areas of work affecting burnout, and intent to leave among hematology/oncology NPs.

Sample

Snowball sampling was utilized to recruit participants. Potential participants who identified themselves as NPs were recruited from the membership database of the Oncology Nursing Society. The NPs did not identify their specialty in the profile; however, to be eligible to participate in the study, the NPs had to be or had been employed in the clinical setting in hematology/oncology. The initial participants were recruited via email and asked to forward the survey links to their colleagues.

Instruments

Demographic information was collected using a self-administered questionnaire. The demographic data collected included age, gender, marital status, employment, highest nursing education, type

of practice, years in current position, type of setting, location, type of patient population, and days off for personal reasons in a month.

The Maslach Burnout Inventory–Human Services Survey (MBI-HSS) was used to measure burnout among hematology/oncology NPs. This survey is a 22-item, 7-point Likert scale measuring the frequency of various feelings or emotions associated with the job (0 = Never to 6 = Every day) that addresses EE, DP, and PA. High EE (> 27), high DP (> 13), and low PA (< 31) indicate burnout. The validity and reliability of the instrument was previously reported and include Cronbach's alpha coefficients for the subscales to be 0.90 for EE, 0.79 for DP, and 0.71 for PA, with test-retest reliabilities ranging from 0.50 to 0.82 for the three subscales (Maslach & Leiter, 2008). Both convergent and discriminant validity of the MBI have been established (Maslach & Leiter, 2008).

The Areas of Worklife Survey (AWS) assesses employees' perceptions of work-related factors that may determine whether they experience work engagement or burnout. The AWS was developed as a companion to the MBI in order to determine which areas of the individual's job affect the dimensions of burnout syndrome. This questionnaire is comprised of 28 items on a 5-point Likert scale (1 = Strongly disagree to 5 = Strongly agree) that scores six areas of work: workload (5 questions), control (4 questions), reward (4 questions), community (5 questions), fairness (6 questions), and values (4 questions). The reliability of the instrument was previously reported, with the test-retest reliabilities ranging in the 0.51 to 0.62 range, indicating that the six scales equally affect the work setting (Maslach & Leiter, 2008).

The Intent to Leave Questionnaire was developed by the researchers to assess the intent to leave or remain in the profession. In this study, we used three questions to assess intent to leave, including (1) "I am actively searching for an alternative to this profession," (2) "I will look for a new job outside hematology/oncology in the near future," and (3) "When I can, I will leave the profession." Each item is measured at a 5-point Likert scale (1 = Strongly disagree to 5 = Strongly agree). The questions address whether the intent to leave is immediate or in the future. To facilitate analysis and interpretation, we combined the three ques-

tions to create an overall intent to leave score, with 0 indicating "no" (if no to all three questions) and 1 indicating "yes" (if agreed or strongly agreed to any question). This overall intent to leave item is used in all correlational analyses.

Procedure

Utilizing the database obtained from the Oncology Nursing Society, emails with a link to the surveys were sent to 650 participants who identified themselves as being an NP in their profile. The initial email included an introductory letter and the link to the survey. Participants were also asked to forward the study link to colleagues who met the eligibility criteria. A follow-up email was sent 10 days after the initial mailing. Permission from the Institutional Review Board was obtained prior to submitting the emails to the participants.

Data Analysis

Data were analyzed using SPSS 24. Descriptive statistics were performed to examine the characteristics of the sample and to describe the study variables. Bivariate correlations were used to examine the associations between intent to leave and demographic/practice variables, burnout subscales, and AWS subscale scores. We also performed multiple logistic regression analyses to simultaneously examine the variables relating to intent to leave.

RESULTS

Characteristics of the Sample

There were 201 hematology/oncology NPs who participated in this study. Demographic and practice variables are summarized in Table 1. The mean age for the NP participants was 48.5 years ranging from 28 to 70 years, with 52% younger than 50. The majority was female (98.0%), married (75.1%), employed full time (89.2%), had a master's degree (85.1%), and worked in an outpatient setting (71.1%). More than half of the 201 hematology/oncology NPs had worked in their current position for less than 5 years (52.6%), in a teaching hospital (50.7%), and in urban settings (53.7%). The majority cared for adult or geriatric patients (94.0%). Most NPs reported that they had scheduled time off most of the time in the past year (88.6%).

Table 1. Characteristics of the Sample and Relationships to Intent to Leave (N = 201)

Variable	No. (%) or mean (SD)	Intent to leave (yes)	Statistics, <i>p</i> value
Age (years) ^a	48.53 (10.67)		$r = -0.022, p = .756$
28–40	51 (25.5%)	13 (25.5%)	
41–50	53 (26.5%)	10 (18.9%)	
> 50	96 (48.0%)	21 (21.9%)	
Gender			NA ^b
Male	4 (2.0%)		
Female	197 (98.0%)		
Marital status			$\chi^2 = 1.453, p = .228$
Not married	50 (24.9%)	14 (28.0%)	
Married	151 (75.1%)	30 (19.9%)	
Employment			$\chi^2 = 0.062, p = .804$
Full-time	173 (89.2%)	37 (21.4%)	
Part-time	21 (10.8%)	4 (19.0%)	
Highest nursing education			$\chi^2 = 0.470, p = .493$
Master's degree	171 (85.1%)	36 (21.1%)	
DNP/PhD	30 (14.9%)	8 (26.7%)	
Type of practice			$\chi^2 = 2.072, p = .355$
Inpatient	16 (8.0%)	3 (18.8%)	
Outpatient	143 (71.1%)	35 (24.5%)	
Both	42 (20.9%)	6 (14.3%)	
Years in current position			$\chi^2 = 1.865, p = .172$
< 5 years	101 (52.6%)	26 (25.7%)	
5 or more years	91 (47.4%)	16 (17.6%)	
Type of setting			$\chi^2 = 0.767, p = .857$
Community hospital	37 (18.4%)	7 (18.9%)	
Private practice	54 (26.9%)	12 (22.2%)	
Small hospital	8 (4.0%)	1 (12.5%)	
Teaching hospital	102 (50.7%)	24 (23.5%)	
Location			$\chi^2 = 0.863, p = .650$
Rural	17 (8.5%)	4 (23.5%)	
Suburban	75 (37.8%)	14 (18.4%)	
Urban	108 (53.7%)	26 (24.1%)	
Patient population			$\chi^2 = 3.675, p = .055$
Pediatrics	12 (6.1%)	0 (0%)	
Adults (include geriatrics)	189 (93.9%)	44 (23.8%)	
Days off for personal reasons in a month			$\chi^2 = 10.217, p = .001^c$
Never or rarely	23 (11.4%)	11 (47.8%)	
Most of the time	178 (88.6%)	33 (18.5%)	

^aRange = 28–70.^bNot analyzed due to small sample size.^cStatistically significant.

Intent to Leave

In the Intent to Leave Questionnaire, 14.4% (n = 29) of the respondents were actively searching for an alternative to the NP profession, 10.4% (n = 21) indicated that they would remain NPs but look for a new job outside hematology/oncology in the near future, and 12% (n = 24) agreed or strongly agreed to the statement “When I can, I will leave the profession.”

For the overall intent to leave item, calculated by combining the three questions and using 0 to indicate “no” (if strongly disagree or disagree to all three questions) and 1 to indicate “yes” (if agreed or strongly agreed to any of the three questions), 44 (21.9%) reported intent to leave the profession altogether or the hematology/oncology specialty.

Burnout

Burnout, as measured by the MBI, addresses three scales: EE, DP, and PA. The burnout scores are described in Table 2. The internal consistency was acceptable for all three subscales, with an alpha of 0.93 for EE, 0.74 for DP, and 0.75 for PA. The mean subscale score for EE was 20.82 (standard deviation [SD] = 12.82), ranging from 0 to 54 (possible: 0–54). The mean subscale score for DP was 4.77 (SD = 4.91), ranging from 0 to 25 (possible: 0–30). The mean PA subscale score was 36.69 (SD = 7.45),

ranging from 7 to 48 (possible: 0–48). Among respondents, more than half (n = 117, 58.2%) experienced moderate or high EE; 26.9% (n = 54) reported moderate to high DP; and 21.4% (n = 43) reported low PA. When asked how often they experience burnout from their work, 10% reported experiencing burnout daily, 13.5% reported a few times a week, 15% reported a few times a month, 14.5% reported once a month or less, and 28.5% reported a few times a year or less. Only 18.5% of all 201 participants reported never experiencing burnout from their job.

Overall, 31.3% of hematology/oncology NPs reported professional burnout. Overall professional burnout was determined by dichotomizing the results into burnout or no burnout, with burnout indicated as having at least one symptom of burnout if the participant had high scores on either the EE (total score of higher than 27) or DP (total score of higher than 13) subscales.

The correlation between EE and intent to leave was statistically significant ($r = 0.459, p < .001$). For participants with low EE, 6% reported intent to leave. For participants with moderate EE, 21.8% reported intent to leave. The intent to leave was 43.5% among participants with high EE. The correlation between DP and intent to leave showed a similar pattern ($r = 0.276, p < .001$). The intent to leave rate was 16.3% for participants with low

Table 2. Burnout Subscale Scores and Levels and Relationship to Intent to Leave

	Mean (SD) or no. (%)	Intent to leave, no. (%)	Statistics, <i>p</i> value
Emotional exhaustion (9 items)	20.82 (12.82)		$r = 0.459, p < .001^a$
Low (≤ 16)	84 (41.8%)	5 (6.0%)	
Moderate (17–26)	55 (27.4%)	12 (21.8%)	
High (≥ 27)	62 (30.8%)	27 (43.5%)	
Depersonalization (5 items)	4.77 (4.91)		$r = 0.276, p < .001^a$
Low (≤ 6)	147 (73.1%)	24 (16.3%)	
Moderate (7–12)	36 (17.9%)	10 (27.8%)	
High (≥ 13)	18 (9.0%)	10 (55.6%)	
Personal accomplishment (8 items)	36.69 (7.45)		$r = -0.117, p = .099$
Low (≥ 39)	43 (21.4%)	12 (27.9%)	
Moderate (32–38)	63 (31.3%)	17 (27.0%)	
High (≤ 31)	95 (47.3%)	15 (15.8%)	

Note. Cronbach's alpha in this study was 0.93 for EE, 0.74 for DP, and 0.75 for PA.

^aStatistically significant.

Table 3. Areas of Worklife and Relationship to Intent to Leave

Areas of Worklife subscales	Mean (SD)	Intent to leave statistics
Community	3.70 (0.77)	$r = -0.312, p < .001^a$
Value	3.55 (0.71)	$r = -0.272, p < .001^a$
Control	3.49 (0.83)	$r = -0.242, p < .001^a$
Reward	3.49 (0.56)	$r = -0.369, p < .001^a$
Workload	2.90 (0.88)	$r = -0.254, p < .001^a$
Fairness	2.83 (0.80)	$r = -0.253, p < .001^a$

^aStatistically significant.

DP level, 27.8% for those with moderate DP level, and 55.6% among participants with high DP level. The intent to leave was 15.8% for respondents with high PA, 27% for moderate PA, and 27.9% for low PA; this correlation did not reach statistical significance ($r = 0.117, p = .099$).

Areas of Worklife

The domains that comprise the areas of worklife are workload, control, reward, community, fairness, and value. The mean scores for these domains were 2.90, 3.49, 3.49, 3.70, 2.83, and 3.55, respectively. All subscales were significantly related to intent to leave (Table 3). The higher the scores for areas of worklife were, the lower the tendency was for intent to leave.

Relationship Between Burnout, Areas of Worklife, and Intent to Leave

The relationships between demographic and practice variables and intent to leave are displayed in Table 1. The only significant finding was between whether there were days off for personal reasons. For participants who selected never/rarely, 47.8% had an intent to leave, while the rate was 18.5% for those who had days off for personal reasons most of the time ($\chi^2 = 10.217, p = .001$). The relationship between patient population and intent to leave was approaching significance. It appeared that NPs who work with pediatric patients were less likely to report intent to leave than those who work with adult and geriatric patients, but the effect size is small (0% vs. 23.8%, $p = .055$, effect size $\phi = 0.137$).

We performed multiple logistic regressions to simultaneously examine the effects of burnout, areas of worklife, and days off for personal reasons on intent to leave. The results are displayed in Table 4. Emotional exhaustion remained significant ($p < .001$); one unit increase in EE is associated with a 0.105% increase in likelihood of intent to leave. Areas of Worklife Survey reward was negatively related to the likelihood of intent to leave ($p < .05$). In addition, AWS value was also significantly related to intent to leave ($p < .05$). Days off for personal reasons, DP subscale, and other AWS subscales became nonsignificant after controlling for the multiple variables in the model.

Table 4. Effects of Burnout and Areas of Worklife on Intent to Leave

	B	χ^2	p value	Adjusted odds ratio (95% CI)
Scheduled days off for personal reasons	-.350	.302	.582	.705 (0.203-2.452)
Emotional exhaustion	.100	12.942	< .001 ^a	1.105 (1.046-1.167) ^a
Depersonalization	-.030	.346	.556	.970 (0.877-1.073)
Personal accomplishment	.007	.040	.842	1.007 (0.939-1.081)
AWS workload subscale	.092	.084	.772	1.097 (0.587-2.050)
AWS control subscale	.537	2.693	.101	1.710 (0.901-3.246)
AWS reward subscale	-.917	4.531	.033 ^a	.400 (0.172-0.930) ^a
AWS community subscale	-.282	.755	.385	.754 (0.399-1.425)
AWS fairness subscale	-.049	.023	.881	.952 (0.500-1.811)
AWS value subscale	-.645	3.946	.047 ^a	.525 (0.278-0.991) ^a
Constant	.914	.148	.701	2.493

Note. CI = confidence interval; AWS = Areas of Worklife Survey. Model $\chi^2 = 60.489$, degrees of freedom = 10, $p < .001$.

^aStatistically significant.

DISCUSSION

This is the first study to determine the rates of burnout and intent to leave in hematology/oncology NPs. The results indicate burnout among hematology/oncology NPs to be 31.3%, with an overall intent to leave reported at 21.9%. The burnout rate is similar to that of oncology physician assistants (34.8%), lower than that of MDs (44.7%), and higher than that of NPs in other settings (22.6%; Edwards et al., 2018; Shanafelt et al., 2014; Tetzlaff et al., 2018). The intent to leave among hematology/oncology NPs was higher than that of NPs in acute and primary care (8%–12%; Hoff, Carabetta, & Collinson, 2017), but lower than that of oncologists planning on leaving their current jobs (34.3%) or retiring (28.5%; Shanafelt et al., 2014).

Nearly a third of hematology/oncology NPs (30.8%) reported high EE, 9% high DP, and 21.4% low PA at the time the study was conducted. The prevalence of EE in hematology/oncology NPs was similar to that of physician assistants (30.4%) and lower than that of physicians (38.3%) working in the same setting (Cañadas-De La Fuente, 2018; Tetzlaff et al., 2018). This study's participants had fewer high DP scores (9%) when compared to those for physician assistants and MDs (17.6% and 24.9%, respectively; Shanafelt et al., 2014; Tetzlaff et al., 2018). Most NPs reported moderate to high PA, with only 21.4% experiencing low PA. This is slightly higher than the PA levels of physician assistants (19.6%) and MDs (13.2%; Tetzlaff et al., 2018). Emotional exhaustion and not being rewarded and valued were associated with intent to leave. Workload was not associated with the intent to leave.

The ability to schedule days off for personal reasons was significantly related to the intent to leave. Participants who were rarely or unable to schedule days off were more likely to leave. However, this relationship was no longer significant after controlling for several variables in the logistic regression model. Although there was no significant relationship between the patient population the NPs care for and intent to leave, it appears that NPs who work with pediatric patients were less likely to report intent to leave when compared to those who work with adult and geriatric patients.

This study was limited by its reliance on self-reported data from the survey. Although the Oncology Nursing Society members were asked to

forward their survey to their colleagues, it is difficult to ascertain how many participants were not members, limiting our generalizability to hematology/oncology NPs who are Oncology Nursing Society members. In addition, the nature of snowball sampling limits the identification of the true distribution of the population, and it is possible that the results of the hematology/oncology NPs who completed the survey share the same traits and characteristics. In addition, the questionnaires provided little detail about the nature of the specific subscale challenges, such as workload, limiting the interpretation of the results. Larger studies utilizing mixed methods are needed to confirm these findings.

ADVANCED PRACTICE IMPLICATIONS

The incidence of cancer is increasing as baby boomers age; however, the number of oncology/hematology APs is not increasing at the same rate. Given predictions of AP role expansion, NP workload is expected to increase. This is an issue of huge concern because burnout happens with high patient volume (Tawfik et al., 2017). Based on the findings of this study, 31.3% of hematology/oncology NPs are already experiencing high burnout and 21.9% intend to leave their current NP job or NP profession altogether. Although workload was not associated with the intent to leave at the time this study was conducted, increasing the workload may lead to a decreased likelihood of being able to schedule days off for personal reasons, which has been associated with intent to leave.

To address this challenge, we must first attempt to reduce the rates of burnout and intent to leave. This can be accomplished by addressing the inability of the hematology/oncology NP to schedule days off for personal reasons. Efforts must be made to ensure that NPs are able to schedule days off at least most of the time. Evaluating ways to increase reward and value are also important in reducing the intent to leave, as decreases in reward and value have been associated with a higher likelihood of leaving the profession.

Secondly, we must determine what the role expansion entails and how it will affect care quality, efficiency, and patient outcomes. It will also be important to evaluate the link between hematology/oncology NP burnout and patient outcomes. Additional policies at the state and federal levels

may be needed to support a more enriching and supportive work environment for hematology/oncology NPs, one that will include not only higher pay but also one that allows for scheduling days off for personal reasons (Hoff et al., 2017).

CONCLUSION

Burnout, associated with the highly stressful nature of the hematology/oncology environment, has been the focus of researchers for decades. It is highly relevant to the NP workforce, as NPs' scope of practice is anticipated to expand to accommodate for the predicted hematology/oncology physician shortage. The results of this study indicate that, much like other oncology health-care providers, hematology/oncology NPs also experience high EE, with over 20% indicating an intent to leave their current job or nursing profession. Efforts to reduce burnout and intent to leave will need to be tailored to the individual practice setting of the hematology/oncology NP, and consideration should be given to interventions aimed to reduce EE, such as mindfulness-based stress reduction (Williams, Simmons, & Tanabe, 2015) and increasing the reward and value of NPs. Workplace factors, such as the ability to schedule days off, may play a protective role in reducing the intent to leave. ●

Disclosure

The authors have no conflicts of interest to disclose.

References

- Association of Community Cancer Centers. (2017). Highlights from 2017 Trending Now in Cancer Care Survey. Retrieved from <https://www.accc-cancer.org/home/learn/publications/Trends/2017-trending-now-in-cancer-care-survey>
- Cañadas-De La Fuente, G. A., Gómez-Urquiza, J. L., Ortega-Campos, E. M., Cañadas, G. R., Albendín-García, L., & De la Fuente-Solana, E. I. (2018). Prevalence of burnout syndrome in oncology nursing: A meta-analytic study. *Psycho-Oncology*, 27(5), 1426–1433. <https://doi.org/10.1002/pon.4632>
- Edwards, S. T., Marino, M., Balasubramanian, B. A., Solberg, L. I., Valenzuela, S., Springer, R.,...Cohen, D. J. (2018). Burnout among physicians, advanced practice clinicians and staff in smaller primary care practices. *Journal of General Internal Medicine*, 33(12), 2138–2146. <https://doi.org/10.1007/s11606-018-4679-0>
- Freudenberger, H. J. (1974). Staff burn-out. *Journal of Social Issues*, 30(1), 159–165. <https://doi.org/10.1111/j.1540-4560.1974.tb00706.x>
- Hoff, T., Carabetta S., & Collinson, G. E. (2017). Satisfaction, burnout, and turnover among nurse practitioners and physician assistants: A review of the empirical literature. *Medical Care Research and Review*, 76(1), 3–31. <https://doi.org/10.1177/1077558717730157>
- Kosty, M. P., Acheson A. K., & Tetzlaff, E. D. (2015). Clinical oncology practice 2015: Preparing for the future. *American Society of Oncology Education Book*, 2015, e622–e627. https://doi.org/10.14694/EdBook_AM.2015.35.e622
- Linzer, M., Sinsky, C. A., Poplau, S., Brown, R., & Williams, E. (2017). Joy in medical practice: Clinician satisfaction in the healthy work place trial. *Health Affairs*, 36(10), 1808–1814. <https://doi.org/10.1377/hlthaff.2017.0790>
- Maslach, C., & Leiter, M. P. (2008). Early predictors of job burnout and engagement. *Journal of Applied Psychology*, 93(3), 498–512. <https://psycnet.apa.org/doi/10.1037/0021-9010.93.3.498>
- Shanafelt, T. D., Gradishar, W. J., Kosty, M., Satele, D., Chew, H., Horn, L., & Raymond, M. (2014). Burnout and career satisfaction among US oncologists. *Journal of Clinical Oncology*, 32(7), 678–686. <https://doi.org/10.1200/jco.2013.51.8480>
- Smith, B. D., Smith, G. L., Hurria, A., Hortobagyi, G. N., & Buchholz, T. A. (2009). Future of cancer incidence in the United States: Burdens upon an aging, changing nation. *Journal of Clinical Oncology*, 27(17), 2758–2765. <https://doi.org/10.1200/jco.2008.20.898>
- Tawfik, D. S., Phibbs, C. S., Sexton, J. B., Kan, P., Sharek, P. J., Nisbet, C. C., & Profit, J. (2017). Factors associated with provider burnout in the NICU. *Pediatrics*, 139(5), e20164136. <https://doi.org/10.1542/peds.2016-4134>
- Tetzlaff, E. D., Hylton, H. M., DeMora, L., Ruth, K., & Wong, Y. (2018). National study of burnout and career satisfaction among physician assistants in oncology: Implications for team-based care. *Journal of Oncology Practice*, 14(1), e11–e22. <https://doi.org/10.1200/jop.2017.025544>
- Towle, E. L., Barr, T. R., Hanley, A., Kosty, M., Williams, S., & Goldstein, M. A. (2011). Results of the ASCO Study of Collaborative Practice Arrangements. *Journal of Oncology Practice*, 7(5), 278–282. <https://doi.org/10.1200/jop.2011.000385>
- Williams, H., Simmons, L. A., & Tanabe, P. (2015). Mindfulness-based stress reduction in advanced nursing practice: A nonpharmacologic approach to health promotion, chronic disease management, and symptom control. *Journal of Holistic Nursing*, 33(3), 247–259. <https://doi.org/10.1177/0898010115569349>
- Yang, W., Williams, J. H., Hogan, P. F., Bruinooge, S. S., Rodriguez, G. I., Kosty, M. P.,...Goldstein, M. (2014). Projected supply of and demand for oncologists and radiation oncologists through 2025: An aging, better-insured population will result in shortage. *Journal of Oncology Practice*, 10(1), 39–45. <https://doi.org/10.1200/JOP.2013.001319>