

Hope, Burnout, and Life Satisfaction: An Intriguing Trinity Among Investigators of the SWOG Cancer Research Network

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QUESTION ASKED: Does level of personal hopefulness mediate the relationship between job burnout and general satisfaction with life among oncology professionals?

SUMMARY ANSWER: Oncology professionals' levels of hopefulness were found to mediate the relationship between burnout and life satisfaction. Hopefulness also mediated the relationship between social support and life satisfaction.

WHAT WE DID: We conducted an online survey of oncology professionals within the SWOG Cancer Research Network, an organization of clinical practitioners, investigators, and other professionals dedicated to cancer care delivery. A total of 1,000 SWOG members were randomly selected to participate; 226 responded, with more than half the sample comprising physicians and registered nurses. The survey included measures of hope, social support, work stress, job burnout, and life satisfaction. Hopefulness was assessed using the Adult Hope Scale, the most frequently used measure of hope in the social science literature. This self-report scale operationalizes hope as the perception that it is possible to achieve one's life goals through a combination of agency (motivation or determination) and pathways (plans or strategies). We hypothesized that hope would mediate the relationship between burnout and life satisfaction, such that greater burnout would be associated with lower hope, which in turn would be associated with lower life satisfaction. We also included perceived social support in our analyses, given that past research has shown that receiving greater social support is related to lower levels of burnout and higher levels of psychological well-being.

WHAT WE FOUND: Given that factors such as burnout, hope, and life satisfaction are likely to be multifactorial in their determinants, we tested a multiple mediational model, examining the simultaneous relationships among these variables. Levels of job stress ($M = 3.59$ of 5) and burnout ($M = 2.77$ of 5) were both moderate in the

present sample. Although job stress was statistically significantly related to burnout, neither work stress nor burnout had direct relationships with life satisfaction when all variables were considered together in the mediational analysis. Instead, the relationship between burnout and life satisfaction was mediated by hope (lower limit CI [LLCI] = 0.031, upper limit CI [ULCI] = 0.292). This demonstrates the value of testing a collective statistical model; namely, our model allows for the determination that burnout's apparent relationship with life satisfaction is due largely to both these variables' relationships with hope. Additionally, the relationship between degree of social support and life satisfaction also was partially mediated by hope (LLCI = 0.371, ULCI = 1.369).

BIAS, CONFOUNDING FACTOR(S), DRAWBACKS: A few drawbacks are present. First, the study was cross-sectional, so appropriate caution should be taken in drawing causal conclusions. Second, to keep the survey length manageable and maximize participation, single-item measures were used to assess job stress, burnout, and social support. Thus, researchers should consider replicating the present relationships using longer-form, standardized measures of these factors. Finally, given that our sample was imbalanced in terms of gender (73.7% female and 26.3% male), this may limit the generalizability of the results.

REAL-LIFE IMPLICATIONS: Our results suggest that the combination of hope and social support may mitigate the effects of burnout on life satisfaction. Brief and cost-effective interventions to enhance hope already exist, typically delivered in group formats, which also encourage social support. Feldman and Dreher, for instance, developed a single-session group hope workshop, with demonstrated capacity to increase hope and sense of meaning or purpose in non-health care professionals. Such interventions for health care professionals warrant further study.

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abstract

PURPOSE Although hope has been explored in patients, few studies have investigated hopefulness in health care professionals. We surveyed oncology professionals within the SWOG Cancer Research Network, exploring relationships among personal hopefulness, social support, work stress, burnout, and life satisfaction. We hypothesized that hope would mediate the relationships between these other variables and life satisfaction.

METHODS SWOG members were randomly selected for an online survey containing measures of hope, social support, work stress, burnout, and satisfaction with life. Of 1,000 invitees, 226 responded.

RESULTS We tested a multiple mediational model using Hayes' bootstrapping approach (ie, PROCESS v3.4). As hypothesized, hope partially mediated the relationships between burnout and life satisfaction as well as between social support and life satisfaction. In particular, hopefulness was associated with lower burnout (-0.23 ; $P = .005$), greater social support (0.23 ; $P = .005$), and greater life satisfaction (0.50 ; $P < .001$). Work stress was associated with greater burnout (0.57 ; $P < .001$) but was not associated with general life satisfaction. Finally, social support was associated with lower burnout (-0.16 ; $P = .005$) and greater life satisfaction (0.24 ; $P < .001$).

CONCLUSION Our results suggest that hope may mitigate the effects of burnout. The combination of hope and social support may prove helpful for reducing burnout and improving life satisfaction. Single-session hope-enhancement interventions incorporating both hope and social support have previously been shown to increase hope and well-being in non-health care professionals. Such interventions for health care providers warrant further study.

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INTRODUCTION

For many patients and their caregivers, treatment trials in oncology constitute a mechanism for restoring hopefulness in clinical contexts that are potentially dire.¹ This intense craving for hope is manifest in patients' willingness to participate in risk-laden studies (eg, testing orphan drugs for rare diseases)² and even to enroll in phase I trials where cure is effectively unattainable.³

However, clinical investigators may have a more complex relationship with hope than the patients they recruit to participate in studies. A recent statistical analysis of the content of nearly two decades of articles in two high-impact journals (*Journal of Clinical Oncology* and *JAMA Oncology*) found that investigators appear increasingly reluctant to use the language of hope when publishing original research, even as cancer death rates

have dropped.⁴ Curiously, authors use the word hope significantly more frequently in narrative essays in these same journals, which seems to affirm the importance of hope in investigators' own lives.

Little is known empirically about the role of hope in the lives of oncology investigators and providers. What is increasingly recognized, however, are the pernicious effects of work stress and burnout for health care providers in general and cancer care clinicians in particular. On average, health care professionals experience relatively high levels of work stress,⁵⁻⁸ which in turn predict burnout.^{9,10} Much has been written about physician burnout in recent years, particularly given its relationships with poorer patient care^{11,12} and the increased costs to the medical system attributable to lost clinical hours and job turnover.^{13,14} Similar concerns have been noted in other health care professions.¹⁵

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There is reason to believe that higher hope is associated with lower burnout. Rushton et al¹⁶ found correlations (r 's = -0.31 to -0.34) between hope and burnout among nurses working in six highly stressful units (two pediatric or neonatal, two oncology, and two adult critical care) in four hospitals. Sherwin et al¹⁷ observed a similar relationship among nurses in chronic-care rehabilitation units. This relationship has also been documented in samples of social workers,¹⁸ first responders,¹⁹ and assisted living employees (eg, certified nursing assistants and dieticians).²⁰ Finally, one study examined this relationship in physicians finding a similar association between hopefulness and lower burnout (among members of the Society of Gynecologic Oncology).²¹

Authors frequently call for an increased focus on the well-being of health care professionals, which is often used as an antonym for burnout.²² Well-being is a much broader term, of course, encompassing overall satisfaction with life, not merely a lack of difficulties at work. In comparison with burnout, less is known about the factors that predict life satisfaction among physicians and other health care professionals. To what degree and how burnout plays a role in overall life satisfaction are still open questions. As is well-known, however, physicians have elevated rates of suicidality compared with the general population.^{23,24} Accordingly, the American Foundation for Suicide Prevention produced a consensus statement calling for research concerning possible risk and protective factors related to the mental health and well-being of physicians.²⁵ Hope may constitute one such protective factor.

C. R. Snyder's Hope Theory²⁶ is the most extensively cited conceptualization of hope in the social science research literature. Hope Theory defines hope as a measurable, cognitive, goal-directed phenomenon. In particular, Snyder et al operationalize hope as a "cognitive set that is based on a reciprocally-derived sense of successful agency (goal-directed determination) and pathways (planning to meet goals)." Within this model, goals consist of anything that individuals desire to get, do, be, experience, or create. Agency consists of people's beliefs regarding their ability to initiate and maintain movement toward goals. These agency beliefs provide motivation, particularly when faced with setbacks. Finally, pathways are plans or strategies that one believes will lead to goals. People high in hope tend to habitually produce many pathways toward goals in anticipation of potential obstacles. In sum, people are hopeful when they believe they are likely (through their motivated action and plans) to reach desired outcomes.

A self-report measure of this model of hope, the Adult Hope Scale, includes items tapping goal-directed agency and pathways.²⁶ Multiple studies show links between this measure and greater life satisfaction in a variety of populations, including college students,^{27,28} adolescents and adults,²⁹ individuals with mild intellectual disability,³⁰ and patients with cancer.³¹ In addition, higher levels of hope appear to be related to better health, whether physical or

emotional. Higher hope is associated with being a non-smoker,³² regular physical activity,³³ and salutary dietary habits.^{34,35} People with higher hope cope better with chronic pain than their lower-hope counterparts and also report lower levels of depression and anxiety.^{36,37} Finally, women with breast cancer who have higher hope tend to cope in ways consistent with a fighting spirit, whereas lower-hope women are more likely to report a sense of helplessness or anxious preoccupation with the disease.³⁸

In addition to hope, another factor associated with life satisfaction is social support. Perceived support from family and friends has been shown to robustly and consistently relate to life satisfaction in populations including young adults,³⁹ older adults,⁴⁰ individuals with end-stage renal disease,⁴¹ and people living with HIV.⁴² Moreover, in a recent survey of health care professionals working in hospice and palliative care settings, more than half cited "talking with family, friends, and significant others for support" as an essential strategy they use to manage burnout.⁶ Thus, any investigation of the factors associated with life satisfaction or burnout should include social support.

To clarify the relationships among hope, social support, job stress, burnout, and satisfaction with life, we conducted a survey of oncology professionals within the SWOG Cancer Research Network, an organization comprising clinical practitioners, investigators, and other professionals dedicated to cancer prevention and care delivery. Although hope and its relationship to life satisfaction have been studied relatively extensively in patients, they have been studied infrequently in health care professionals. Moreover, although informative, none of the research detailed above examined the simultaneous relationships among hope, social support, work stress, burnout, and life satisfaction. In the present study, we test the relationships among these variables in a single statistical model. This is important because the determinants of outcomes such as life satisfaction and burnout are likely to be multifactorial. Consequently, we use a multiple mediation model to examine the interrelatedness of these factors.

METHODS

Participants

A total of 1,000 SWOG members were randomly selected from the organization's membership database and invited to participate in the survey. Random selection reflected a cross-section of professions most commonly represented in SWOG (see Table 1 for sample characteristics). To maintain anonymity, invitation emails were sent directly from the SWOG operations office; names and other identifying information were not collected. The survey was voluntary, and there was no material incentive to participate. For four consecutive months (September-December 2019), members were sent reminder emails. The study was approved by the SWOG Executive Committee and Santa Clara University Institutional Review Board.

Instruments and Data Collection

Participants clicked on a link in the invitation email and were taken to an online survey, which was field-tested to confirm that it required < 10 minutes. After providing informed consent, participants completed the following measures: Hope was assessed using the Adult Hope Scale,²⁶ a 12-item measure yielding scores from 8 to 64 ($\alpha = .87$); higher scores represent greater hopefulness. General life satisfaction was assessed using the Satisfaction

with Life Scale,⁴³ a five-item measure yielding scores from 7 to 35 ($\alpha = .89$); higher scores indicate greater life satisfaction. Single items assessed work stress (Please choose a number on the scale below to indicate the degree of stress you experience in your work), burnout (Please choose a number on the scale below to indicate the degree to which you consider yourself burned out in your work), and social support (Please choose a number on the scale below to indicate the degree to which you believe you have social and emotional support in your personal life—eg, spouse, family, friends, etc). These items were rated on five-point Likert scales. Finally, demographics were collected, including age, gender, ethnicity, profession, and work environment (academic, private, and other).

TABLE 1. Sample Demographics (N = 226)

Characteristic	No.	%
Age, years		
18-24	2	0.9
25-34	35	15.5
35-44	73	32.3
45-54	42	18.6
55-64	54	23.9
65 and older	19	8.4
Declined to state	1	
Gender		
Female	165	73.7
Male	59	26.3
Declined to state	2	
Ethnicity		
African American	7	3.1
Asian or Asian American	23	10.2
Latino or Latina	14	6.2
White	176	77.9
Multiethnic	4	1.8
Declined to state	2	
Profession		
Medical oncologist	47	20.8
Surgeon	18	8.0
Radiation oncologist	9	4.0
Palliative medicine specialist	3	1.3
Registered nurse	46	20.4
Nurse practitioner	12	5.3
PhD researcher	4	1.8
CRA	29	12.8
Patient advocate	9	4.0
Other	49	21.6
Work setting		
Academic hospital	119	52.7
Private hospital	49	21.7
Other	58	25.7

Abbreviation: CRA, clinical research associate.

Statistical Analysis

Demographic data were summarized using descriptive statistics (counts, percentages, means, and standard deviations). Bivariate relationships among continuous variables were analyzed using Pearson correlations, and analysis of variance (ANOVA) was used to compare means of continuous variables between groups (eg, professions and work settings). Statistical modeling was performed via Hayes' bootstrapping approach to multiple mediation using PROCESS v3.4 within the SPSS software package.⁴⁴ As mentioned, the PROCESS procedure allows researchers to analyze the relationships among a variety of variables simultaneously. In the case of the present study, this analysis facilitated a more comprehensive assessment of the factors that combine to predict participants' satisfaction with life.

RESULTS

Demographics

Of the 1,000 members invited to participate, 226 completed the survey, a response rate (22.6%) similar to past surveys of medical professional organizations.²¹ Table 1 describes sample characteristics. The most frequent age group was 35-44 years (32.3%) and most respondents were female (73.7%) and White (77.9%). The sample included a range of professions, with medical oncologists (n = 47) and registered nurses (RNs; n = 46) being the most common. The Other category (n = 49) consisted of a highly heterogeneous mixture of professionals, with the most frequently cited being clinical research coordinators (n = 7) and pharmacists (n = 3). Most participants reported working in academic medical centers (52.7%), with fewer working in private medical centers (21.7%) and other work environments (25.7%) such as community hospitals (n = 5), private practices (n = 4), and Veterans Affairs hospitals (n = 3).

Associations of Hope, Social Support, Work Stress, Burnout, and Life Satisfaction With Profession and Work Setting

Table 2 describes levels of hope, social support, job stress, burnout, and life satisfaction across professions and work

settings. We first performed ANOVAs to test for differences among professions on these variables. It should be noted that a number of professions were only endorsed by a small number of participants. Therefore, to ensure more stable mean comparisons, we limited our analyses to professions endorsed by 10 or more participants (Table 2). Because two physician specialties (radiation oncology and palliative medicine) were represented by fewer than 10 participants, we combined all physicians into a single category.

Statistically significant differences among professions emerged only for hope ($F(3,149) = 4.78; P = .003$) and life satisfaction ($F(3,149) = 4.78; P = .003$). Although these omnibus ANOVAs were statistically significant, follow-up analyses revealed relatively few differences once Bonferroni corrections were applied. As can be seen in Table 2, there were higher mean levels of hope for physicians (54.47) than RNs (51.51) and clinical research associates (CRAs; 50.52). For life satisfaction, there were higher mean levels for physicians (28.18) than RNs (24.61) and CRAs (22.85), as well as higher mean levels for nurse practitioners (28.25) than CRAs (22.85). According to established cutoff scores for the Satisfaction with Life Scale, 0.4% of the total sample was classified as highly dissatisfied with life, 4.4% as dissatisfied, 8.8% as slightly dissatisfied, 18.1% as slightly satisfied, 34.1% as satisfied, and 29.2% as highly satisfied.⁴⁵

Regarding work settings, no differences in hope, life satisfaction, or social support were found. However, the omnibus ANOVA for work stress ($F(2,221) = 14.00; P < .001$) and job burnout ($F(2,221) = 3.60; P = .03$) were statistically significant. Follow-up analyses revealed mean differences only between individuals who reported working in academic medical center environments (3.86 and 2.94

for stress and burnout, respectively) and those choosing the other work environment option (3.10 and 2.42 for stress and burnout, respectively).

Mediational Modeling of Factors Accounting for Burnout and Life Satisfaction

Bivariate Pearson correlations for continuous variables are presented in Table 3. Mediational analyses were performed via Hayes' bootstrapping approach to multiple mediation (model 6 in PROCESS v3.4).⁴⁴ This procedure allows for the simultaneous evaluation of the statistical effects of multiple factors on an outcome. Figure 1 depicts the hypothesized model. This diagram proceeds from left to right, with variables to the left hypothesized to predict variables to the right and variables in the middle serving as mediators. As can be seen, hope is hypothesized to mediate the relationships of work stress, job burnout, and social support with general life satisfaction. In addition, greater social support is hypothesized to have a direct relationship with higher life satisfaction. Finally, work stress is expected to be directly associated with job burnout.

Figure 2 depicts statistically significant paths after performing the analysis. Standardized coefficients represent the strengths of relationships. The relationship between social support and life satisfaction was partially mediated by burnout and hope, as indicated by the fact that the values falling between the lower limit (BootLLCI = 0.031) and upper limit (BootULCI = 0.292) of the 95% bootstrapping CI for this mediated path did not include zero. That is, there were statistically significant paths from social support to burnout ($-0.16; P = .005$), from burnout to hope ($-0.23; P = .005$), and from hope to life satisfaction ($0.50; P < .001$). Hope, by itself, further mediated the

TABLE 2. Levels of Hope, Social Support, Work Stress, Burnout, and Life Satisfaction Among Oncology Professionals by Profession and Work Setting (N = 226)

Characteristic	Means (standard deviations)				
	Hope	Social Support	Work Stress	Job Burnout	Life Satisfaction
Profession					
Physician	54.47 (5.23) ^a	4.33 (0.85)	3.83 (1.03)	2.87 (1.28)	28.18 (5.03) ^a
Registered nurse	51.51 (6.73) ^{b,c}	4.33 (0.82)	3.60 (0.78)	3.00 (1.21)	24.61 (6.23) ^{b,c}
Nurse practitioner	55.18 (5.78) ^{a,b}	4.67 (0.49)	3.83 (0.84)	2.92 (1.24)	28.25 (3.39) ^{a,b}
CRA	50.52 (5.21) ^{b,c}	4.45 (0.69)	3.45 (0.78)	2.69 (1.23)	22.85 (5.25) ^c
Work setting					
Academic hospital	51.89 (7.10)	4.31 (0.79)	3.86 (0.81) ^a	2.94 (1.20) ^a	25.37 (5.90)
Private hospital	52.91 (4.94)	4.49 (0.74)	3.52 (1.11) ^{a,b}	2.82 (1.35) ^{a,b}	26.89 (5.29)
Other	53.14 (5.69)	4.43 (0.87)	3.10 (0.92) ^b	2.42 (1.18) ^b	26.30 (5.69)
Total sample	52.45 (6.33)	4.38 (0.80)	3.59 (0.96)	2.77 (1.25)	25.94 (5.73)
Total sample ranges	29-64	2-5	1-5	1-5	5-35

NOTE. Means with different superscripts are statistically significantly different at $P < .0125$ (ie, Bonferroni-corrected equivalence of $P < .05$). Means that share a superscript are not statistically significantly different. Where superscripts are absent, no significant differences were found.

Abbreviation: CRA, clinical research associate.

TABLE 3. Pearson Correlations Among Oncology Professionals (N = 226)

Variable	1	2	3	4	5
1. Hope	—	.25***	-.03	-.21**	.59***
2. Social support	—	—	-.07	-.18**	.38***
3. Work stress	—	—	—	.58***	-.12
4. Job burnout	—	—	—	—	-.28***
5. Life satisfaction	—	—	—	—	—

** $P < .01$, *** $P < .001$.

relationship between social support and life satisfaction (BootLLCI = 0.371, BootULCI = 1.369), which is represented by the statistically significant paths from social support to hope (0.23; $P = .001$) and from hope to life satisfaction (0.50; $P < .001$). In addition, there was a direct relationship from social support to life satisfaction (0.24; $P < .001$).

Finally, work stress was directly associated with job burnout (0.57; $P < .001$). Of note, however, neither work stress nor burnout was directly associated with life satisfaction. Instead, as previously mentioned, the relationship between higher burnout and lower life satisfaction was mediated through lower hope. Finally, the direct relationship between hope and life satisfaction was significant and relatively large (0.50; $P < .001$).

DISCUSSION

During the past two decades, investigators have endeavored to identify alterable factors contributing to burnout in health care environments.^{11,46} Perhaps not surprisingly, in the present study, we observed a direct relationship between work stress and job burnout. However, neither work stress nor burnout had direct relationships with life satisfaction when all variables were considered together in the mediational analysis. Instead, the relationship between burnout and life satisfaction was mediated by hope. This demonstrates the value of testing a collective statistical model; our model allows for the determination that burnout's apparent relationship with life satisfaction is due almost entirely to both these variables' relationships with

hope. Although relatively little research has tested the association between job burnout and overall life satisfaction, an earlier study noted a similar lack of direct relationship.⁴⁷

Hope's robust (0.50) relationship with life satisfaction is also consistent with past research, which has found a similar relationship in college students,^{27,28} adolescents and adults,²⁹ individuals with mild intellectual disability,³⁰ and patients with cancer,³¹ among other populations. As measured in this study, hope is conceptualized as a positive perception of the future on the basis of a combination of pathways (goal-directed planning) and agency (goal-directed motivation). Research demonstrates that this sense of goal-directed hope predicts later accomplishment of goals.⁴⁸ To the degree that people create satisfying lives through pursuing and accomplishing goals, it makes sense that hope would be strongly related to their overall positive assessment of life.

Social support also exhibited a direct relationship with life satisfaction. This finding is consistent with aforementioned research demonstrating that support from family and friends predicts satisfaction with life in a variety of populations.³⁹⁻⁴² To our knowledge, this is the first study to document this relationship in health care professionals. In the present study, social support also exhibited relationships with hope and burnout. In fact, in addition to mediating between burnout and life satisfaction, hope also mediated the relationship between social support and life satisfaction.

As with all research, the present study has limitations. First, it was cross-sectional, so appropriate caution should be used in drawing causal conclusions. Second, single-item measures were used to assess work stress, burnout, and social support. As is common practice, this was done to keep the survey to a manageable length and maximize participation. Given our results, however, researchers should consider replicating the present relationships using longer-form, standardized measures of these factors. Finally, given the particular age range and imbalanced gender distribution of the sample, care should be taken in generalizing the results.

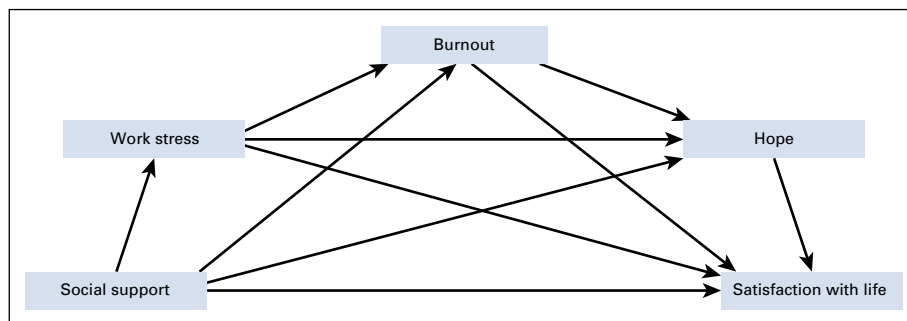


FIG 1. Hypothesized model.

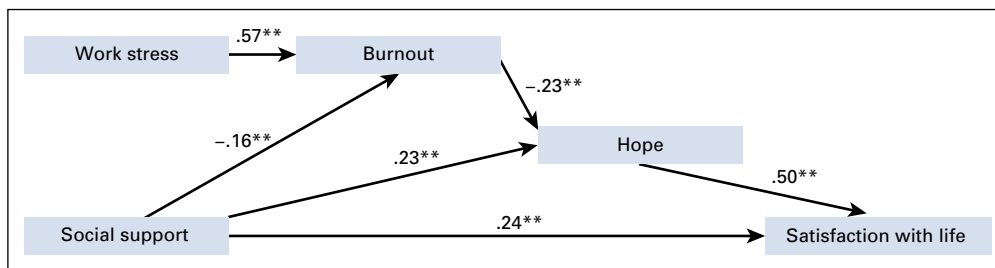


FIG 2. Statistically significant paths with standardized coefficients. ** $P < .01$.

Despite these limitations, these findings have potential implications for increasing life satisfaction in oncology professionals. As mentioned, our cross-sectional design prohibits drawing causal conclusions. Nonetheless, our results are consistent with the notion that job stress and burnout may not directly affect individuals' life satisfaction. Instead, these variables may decrease life satisfaction through their ability to affect hope. In addition, support from family and friends may increase hopefulness as well as life satisfaction. Therefore, practitioners and administrators motivated to improve health care professionals' overall satisfaction with life may consider investing in interventions emphasizing hope and social support, not simply job stress or burnout interventions, per se.

Brief, cost-effective interventions to enhance hope already exist. These are typically delivered in group formats, which also encourage social support. Feldman and Dreher,⁴⁹ for instance, developed a single-session group hope workshop, with demonstrated capacity to increase hope and sense of meaning or purpose in participants' lives and work. The same intervention was also shown to predict goal achievement and

grade point average among college students.⁵⁰ More intensive, multisession hope interventions have also been applied to adult outpatients with a variety of mental disorder diagnoses,⁵¹ African American gay men with HIV,⁵² and older adults with depression,⁵³ among other populations.

Informed by these findings, SWOG leadership (C. Blanke, personal communication, July 2020) has agreed to pilot test a hope-enhancement workshop for members participating in the organization's semi-annual group meeting. At present, there are plans to offer the workshop to three separate populations: physicians, nurses, and patient advocates. Given current COVID-19 social distancing guidelines and diminished opportunity for traditional in-person meetings, the aforementioned Feldman and Dreher intervention⁴⁹ is being converted to a virtual platform. Downstream, it is possible that such workshops will also be studied as an adjunct to treatment trials for patients with cancer conducted by the SWOG Cancer Research Network. Such efforts may afford further insights regarding the methods and effects of fostering hope and life satisfaction in providers and patients.

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

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