Our data suggest residency programs seeking to recruit residents into academic productivity and careers should place high value on first-author and high-impact publications. Further, applicants with more publications are more likely to maintain productivity and pursue employment at academic institutions.

Our data also suggest quality of research is particularly important. Supporting this trend is the observation that increasing number of preresidency case reports is negatively associated with later research productivity. Thus, not all publications are created equal. Also, publication number per applicant has increased in dermatology over time,[5] prompting the question whether applicants are inflating resumes or simply accumulating less impactful work.

Study limitations include use of publication number and academic institution employment as surrogate end points for academic productivity. Academic productivity certainly extends far beyond publications and specific employment. Further, although our estimate of dermatology graduates working for academic institutions (30%) is greater than previous estimates, this may reflect a trend of academic health systems buying private practices. Of note, if this pool of graduates includes those affiliated but not truly involved with academics, it may bias our results against finding significant differences and thus strengthen the validity of our findings.

Although residency programs should take a holistic approach to evaluating applicants beyond grades, test scores, and publication number, this study should inform programs desiring to recruit and students wishing to become academic dermatologists to value greater impact research projects and productivity in medical school.

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Factors contributing to cancer worry in the skin cancer population

To the Editor: Cancer worry is a psychological response seen in patients diagnosed with all cancer types.[1] Although skin cancers are associated with overall low morbidity and mortality, the potential for further spread and recurrence may be a source of notable distress in patients.[2] Our objective was to characterize cancer worry and its demographic and medical correlates in the skin cancer population using a patient-reported outcome measure, the FACE-Q Skin Cancer.

All patients with biopsy-proven skin cancers presenting for dermatologic surgery at a tertiary cancer center were consecutively recruited. All participants prospectively completed the Cancer Worry scale[3] between March 1, 2017, and June 31, 2018, at baseline (before surgery), and a subset of participants completed the scale after surgery during a follow-up visit. Electronic medical records were reviewed for patient demographic, clinical, and surgical information. Comorbidity and functional status were assessed with the age-adjusted Charlson Comorbidity Index and Karnofsky Performance Scale, respectively.

The Cancer Worry Scale is part of the FACE-Q Skin Cancer Module[3] and consists of 10 items. Patient

Table I. Items assessed in the Cancer Worry Scale of the FACE-Q Skin Cancer

1	Worry regarding skin cancer
2	Worry about recurrence
3	Feeling anxious about skin cancer
4	Worry skin cancer may spread in body
5	Worry skin cancer becomes more serious (ie, deeper)
6	Worry skin cancer interferes with daily activities
7	Worry about skin cancer daily
8	Worry prevents patient from enjoying life
9	Worry patient may die from skin cancer
10	Worry interferes with relationships

responses are summed and then transformed on a scale from 0 to 100, with higher values representing greater worry. Items include statements of skin cancer worry, ranging from worry related to recurrence to worry that interferes with relationships (Table I). The scale was developed with a modern psychometric approach called Rasch measurement theory whereby items are ordered according to the concept of interest in a clinical hierarchy (ie, from a small amount of the concept being measured to a large amount). Scores were interpreted by using the FACE-Q Cancer Worry Interpretation Table, which shows the implied range of scores for each response option (Supplemental Table I; available at http://doi.org/10.17632/bgfc3pgscs).[1]

In total, 637 cases were identified; patient characteristics are detailed in Table II. Some degree of cancer worry was reported by 97.3% of patients (n = 620) at baseline (mean score, 49.3 ± 18.7). Based on the interpretation table, a score of 49.3 implied that a patient agreed with half of the items of the Cancer Worry Scale. In total, 222 patients completed the questionnaire after surgery (mean time interval between surgery and survey completion, 8.3 ± 9.4 weeks). In this cohort, patients reported significantly lower scores after surgery, with a mean score of 41.3 ± 20.5 ($P < .001$); this score implies that a patient agreed with fewer items (ie, 2/10). Factors significantly associated with greater baseline cancer worry included unmarried status, unemployment, living alone, and history of melanoma. Sex, skin cancer type, anatomic location, and tumor size did not correlate with increased cancer worry.

Some degree of cancer worry was reported by almost all patients, which may be due to the stresses of a cancer diagnosis and the uncertainty regarding prognosis.[4] Scores after surgery were lower, suggesting that treatment helps mitigate overall worry and anxiety, although low levels may persist. Unmarried

Table II. Cancer Worry Scale scores* of study participants (N = 637)

Variable	n	mean (SD)	*P* value
Sex			
Female	309	49.3 (18.1)	.70
Male	328	48.8 (18.6)	
Age, y			
<40	55	43.1 (17.6)	.03
40 to <65	266	50.1 (19.0)	
≥65	316	49.2 (17.8)	
Marital status			
Married	452	48.17 (19.0)	.03
Not married	182	51.2 (16.5)	
Children			
No	160	49.8 (17.4)	.84
Yes	418	49.5 (18.5)	
Employment status			
Unemployed	262	50.9 (17.9)	.04
Employed	370	47.9 (18.6)	
Living situation			
Alone	132	52.50 (15.8)	.01
Supported† (family, assisted living, nursing home, other)	498	48.31 (18.9)	
KPS score‡			
50	5	64.0 (13.9)	.06
60	9	49.2 (17.1)	
70	3	72.7 (24.4)	
80	8	57.9 (17.4)	
90	70	48.8 (16.3)	
100	243	49.0 (17.7)	
CCI score§			
0	81	49.8 (15.4)	.98
1-2	179	49.1 (20.1)	
3-4	206	48.7 (17.7)	
≥5	171	49.2 (18.7)	
Skin cancer type			
Basal cell carcinoma	327	47.5 (18.6)	.26
Squamous cell carcinoma	146	50.9 (18.0)	
Melanoma in situ	63	49.6 (16.0)	
Invasive melanoma	29	52.2 (19.7)	
Anatomic location			
Head/neck	383	49.5 (18.7)	.27
Trunk/extremity	193	48.0 (18.9)	
Tumor size, mm			
0 to <10 mm	482	48.1 (17.8)	.19
10 to <20	80	50.8 (20.5)	
≥20	20	54.0 (16.1)	
History of skin cancer			
Yes	362	48.9 (18.0)	.39
No	274	49.27 (19.0)	
History of skin cancer type			
NMSC	233	47.60 (17.3)	.03
Melanoma	32	53.0 (14.7)	
History of nonskin cancer			
No	424	50.0 (18.4)	.07
Yes	213	47.2 (18.2)	

Continued

Table II. Cont'd

Variable	n	mean (SD)	*P* value
Currently receiving treatment			
No	184	47.9 (18.5)	.06
Yes	27	41.0 (14.8)	
Family history of skin cancer			
No	455	49.3 (18.7)	>.99
Yes	154	49.3 (18.0)	
History of anxiety			
No	589	48.8 (18.4)	.25
Yes	48	52.0 (18.0)	

CCI, Charlson Comorbidity Index; *KPS,* Karnofsky Performance Scale; *NMSC,* nonmelanoma skin cancer; *SD,* standard deviation.
*Scores were summed and converted to a scale of 0 (lowest score) to 100 (highest score).
†Includes living with family and assisted living.
‡KPS grades describe functional status as an 11-point scale correlating to percentage values ranging from 100% (normal, no symptoms) to 0% (death). A score of 50 indicates that the individual requires considerable assistance.
§The CCI predicts 1-year mortality. A score is calculated based on the presence of 19 conditions.

status, living alone, and unemployment were significantly associated with more baseline worry. A lack of social support has been associated with greater disease-related burden and lower quality of life in survivors of melanoma.[5] Work may shift the focus away from the cancer, and colleagues may provide social support, which reduces cancer worry.

Cancer worry was not associated with skin cancer type. However, patients with a history of melanoma reported higher cancer worry, which may be due to persistent worry of tumor progression/recurrence and ongoing need for support.[6] A trend was identified between tumor size and cancer worry severity, suggesting that patients may interpret disease severity based on presence of visible disease. No clear relationship was identified between functional status and comorbidity status with cancer worry. Although prior studies have shown that anxiety is associated with greater cancer worry, there was no clear relationship seen between history of anxiety and cancer worry in this cohort. Further studies utilizing a validated anxiety tool may better identify a relationship.

Some degree of cancer worry is nearly ubiquitous after skin cancer diagnosis. These study findings suggest that social factors and prior history of melanoma are associated with greater baseline cancer worry. These patient-reported data may be used to guide counseling regarding cancer worry and identify patients before and after surgery who require ongoing follow-up and support.

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