Differences in dermatologic patient complexity based on practice setting

To the Editor: Medical comorbidities and socioeconomic factors affect the presentation and management of dermatologic diseases, the resources required during care, and patient outcomes. Given that few empiric data exist, we conducted a cross-sectional review of dermatologists in the 2017 Medicare Provider/Supplier Public Use File to better understand differences in dermatologic patient complexity between academic and nonacademic dermatologists.

We obtained the practice setting from each dermatologist's group identification number, defining academic setting as major medical centers and research institutions. At the level of each dermatologist, we assessed patient complexity through the Hierarchical Condition Category score, a Centers for Medicare and Medicaid Services–defined risk adjustment measure. The Hierarchical Condition Category score is derived from a Centers for Medicare and Medicaid Services model that considers the quantity and severity of comorbidities, is updated annually, and is validated at the level of each decile in predicting cost of care and 6-month mortality.[1] We also calculated adjusted risk ratios (aRRs) for specific patient comorbidities among academic dermatologists while controlling for other practice variables.

Among academic dermatologists, 55% of patients reached the highest comorbidity levels (Hierarchical Condition Category score deciles 9-10) compared with 14% of patients managed by nonacademic dermatologists (Fig 1). Most individual complexity measures were more frequently demonstrated at academic institutions, despite controlling for other practice variables, with the greatest differences seen in patients with Medicaid insurance (aRR, 1.71; $P < .0001$), schizophrenia (aRR, 1.43; $P < .0001$), depression (aRR, 1.21; $P < .0001$), and asthma (aRR, 1.19; $P < .0001$; Table I).

The analysis underscores the importance of academic institutions in delivering dermatologic care to patients with a higher complexity burden. Many measures of complexity addressed here have implications for dermatologic disease management. Patients with psoriasis are at greater risk of cardiovascular events, and this risk is further exacerbated by coexisting depression.[2] Poorly controlled schizophrenia can affect treatment adherence and also increase the risk for primary psychiatric causes of dermatologic conditions.[3] Depression and reduced access (eg, Medicaid insurance) have been established as significant
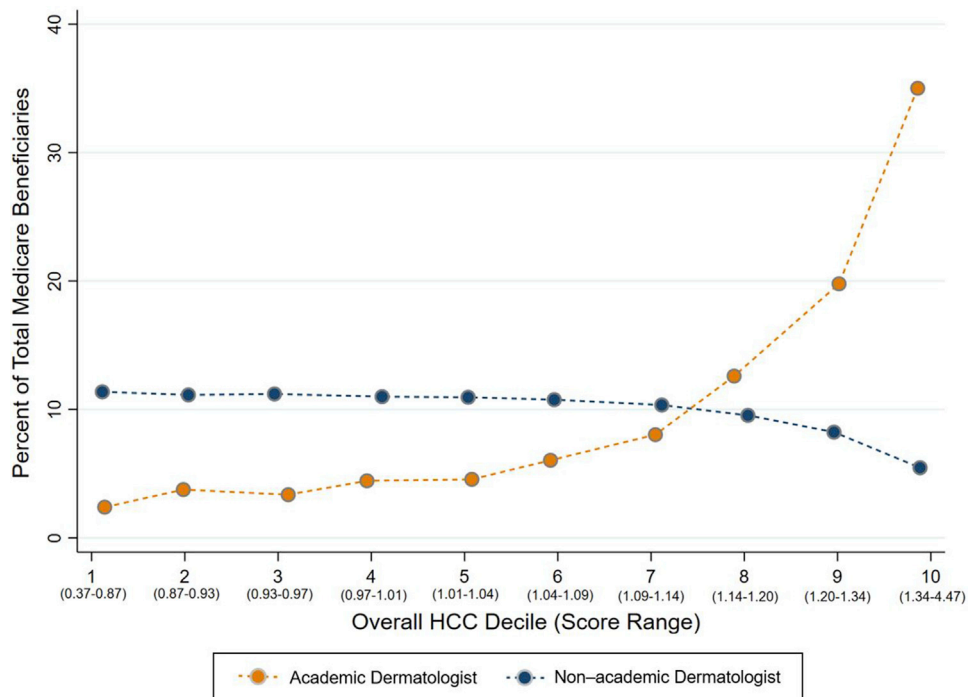

Fig 1. Patient Hierarchical Condition Category (*HCC*) score deciles calculated for patients managed among the academic and nonacademic dermatologists in the sample. Plot points represent the percentage of patients categorized in each HCC score decile in each practice setting.

Table I. Comparison of patient characteristics and comorbidities among nonacademic and academic dermatologists

Study measure*	Nonacademic dermatologists (n = 9665)	Academic dermatologists (n = 1754)	Adjusted risk ratio in academic dermatologists[†] aRR (95% CI)	P value
Patient characteristics				
Patients with Medicaid, %	8.8 ± 11.6	16.0 ± 12.8	1.71 (1.62-1.80)	<.0001
Patients of male sex, %	46.5 ± 9.5	47.8 ± 9.6	1.05 (1.04-1.06)	<.0001
Patients aged >75 years, %	46.9 ± 8.3	42.8 ± 8.5	0.93 (0.92-0.94)	<.0001
Patients of white race, %	90.2 ± 11.6	84.1 ± 13.2	0.93 (0.92-0.94)	<.0001
Patient comorbidities				
Hierarchical Condition Category score				<.0001
High comorbidity relative to national mean (>1.0)	5587 (57.8)	1526 (87.0)	1.49 (1.45-1.53)	<.0001
Specific comorbidities, %				
Schizophrenia	1.7 ± 2.8	2.4 ± 2.8	1.43 (1.28-1.60)	<.0001
Depression	16.0 ± 4.4	20.0 ± 5.9	1.21 (1.19-1.23)	<.0001
Asthma	5.9 ± 2.0	7.2 ± 2.6	1.19 (1.17-1.22)	<.0001
Chronic kidney disease	22.3 ± 6.0	25.6 ± 7.3	1.17 (1.15-1.18)	<.0001
Congestive heart failure	12.1 ± 4.2	14.0 ± 4.7	1.16 (1.14-1.18)	<.0001
Cancer	11.3 ± 2.6	12.3 ± 3.3	1.08 (1.07-1.10)	<.0001
Osteoporosis	8.7 ± 3.0	9.4 ± 3.1	1.08 (1.06-1.10)	<.0001
Chronic obstructive pulmonary disease	9.8 ± 3.5	10.3 ± 3.8	1.07 (1.04-1.09)	<.0001
Alzheimer disease	7.7 ± 3.7	8.0 ± 3.3	1.06 (1.03-1.08)	<.0001
Diabetes	24.1 ± 7.9	25.0 ± 6.9	1.04 (1.03-1.06)	<.0001
Ischemic or hemorrhagic stroke	3.7 ± 1.4	3.8 ± 1.6	1.03 (1.00-1.06)	.029
Ischemic heart disease	29.7 ± 7.3	29.7 ± 6.3	1.02 (1.01-1.03)	<.0001
Atrial fibrillation	10.8 ± 2.7	10.9 ± 2.9	1.02 (1.00-1.03)	.039
Hypertension	60.6 ± 9.0	59.9 ± 8.2	1.00 (0.99-1.01)	.764
Rheumatoid arthritis	39.7 ± 5.2	39.5 ± 5.7	1.00 (0.99-1.00)	.249
Hyperlipidemia	47.7 ± 9.4	43.3 ± 8.8	0.93 (0.92-0.94)	<.0001

aRR, Adjusted risk ratio; *CI*, confidence interval.
*Values are presented as frequency (%) or as mean ± SD.
[†]The aRRs and associated *P* values are determined from a Poisson regression with robust standard error that controlled for dermatologist sex, years of practice, geographic region, and metropolitan (vs nonmetropolitan) practice setting, as determined through rural-urban continuum codes.

barriers to dermatologic treatment compliance and influence disease outcomes. Importantly, patients with multiple comorbidities (eg, diabetes, chronic heart failure) may have several risk factors for dermatologic complications, including ulcer formation.

Despite challenges associated with higher patient complexity, provision of care to sicker patients in academic settings may enable them to better coordinate aspects of care, which in some cases may contribute to improved outcomes at academic institutions.[4] At the same time, complex patients require more intensive care to avoid medical error, and failure to appropriately incentivize care can lead to downstream complications.[5] Our findings therefore support a role for risk-adjusted reimbursement models that are applicable in various dermatologic care settings.

Unfortunately, limited granularity in the data prevented us from determining dermatologic disease severity at the patient level. In addition, lack of outcome measures precluded conclusions regarding quality of care and whether overall management differed in response to complexity. Finally, generalizability of these results beyond the Medicare population cannot be established.

Despite these shortcomings, this study used a comprehensive national data set to characterize the role of academic institutions in supporting patients with multifaceted medical and socioeconomic needs.

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Geographic variation in reduced minority representation at dermatology clinics in the Medicare population

To the Editor: Adequate health care access in dermatology improves outcomes of many skin conditions. Although there are established differences in use of dermatologic services among racial/ethnic groups,[1] to our knowledge, use by minority groups has not been assessed relative to local demographic prevalence rates, especially in elderly individuals with similar insurance.

We performed a cross-sectional review of United States dermatologists in the 2017 Medicare Provider and Other Supplier Public Use File to describe the proportion of clinic patients of a particular race/ethnicity relative to the proportion of regional Medicare beneficiaries of that race/ethnicity by calculating the prevalence rate ratio (PRR):

$$Prevalence\ rate\ ratio\ (PRR) = \frac{racial/ethnic\ group\ clinic\ prevalence\ [weighted\ average\ of\ all\ county/state\ clinics]}{racial/ethnic\ group\ county/state\ prevalence\ [among\ Medicare\ beneficiaries]}$$

For comparison, we additionally analyzed the median clinic-to-county PRRs for primary care physicians. Analysis was performed using Stata 16.0 software (StataCorp, College Station, TX).

Among 10,222 dermatologists, the median (interquartile range [IQR]) clinic-to-county PRRs were 1.16 (1.06-1.35) for non-Hispanic whites, 0.37 (0.23-0.57) for nonwhite minorities, 0.22 (0.09-0.50) for non-Hispanic blacks, and 0.41 (0.22-0.79) for Hispanics (Table I). Minority clinic-to-county PRRs were significantly lower for dermatologists than for primary care physicians. At the state level, the median (IQR) PRR was 1.10 (1.05-1.20) for non-Hispanic whites and 0.45 (0.35-0.52) for nonwhite minorities (Fig 1).

The findings suggest minority Medicare patients are under-represented in dermatology practices. Varying incidence of skin conditions may play a role. Recent national survey data indicate that white patients are more likely to seek dermatologic consultation for seborrheic keratoses, actinic keratoses, or skin cancers (6.2%–15.4% of visits) relative to minorities (<4.0%).[2] This may be particularly true in the South, which demonstrated the greatest underuse due to the higher regional prevalence of ultraviolet radiation–induced cancers, which disproportionately affect white patients.[3] However, minorities likely face a degree of unmet clinical need because they are diagnosed with several skin conditions at later stages, with poorer outcomes.[1,4]

Interestingly, states with the greatest minority under-representation also had a higher minority beneficiary prevalence. This finding, in the context of evidence indicating that minority-dense counties have fewer dermatologists per person,[5] suggests that access barriers to dermatologists may play a role in these regions. Despite minorities presenting more frequently to a primary care physician for a skin complaint,[2] our data also indicate a moderate degree of minority underrepresentation in these settings, potentially impeding dermatology referrals and contributing to access limitations.

Our subgroup analysis implies that socioeconomic factors, such as low median household income, correlate with minority under-representation. Furthermore, because blacks and Hispanics only comprise 3% and 4% of dermatologists, respectively, it is possible that limited physician diversity