

generic versions (n = 50,334 versus n = 39,621, respectively). The mean annual costs of topical therapy per patient were \$308.02 (standard deviation [SD], \$314.71) and \$160.37 (SD, \$209.53) for branded and generic medications, respectively ( $P < .0001$ ). The potential annual per-patient cost saving by switching from a branded medication to a generic was \$147.65.

Our study is limited by its retrospective nature, lack of Medicare and Medicaid claims, and dependency on *International Classification of Diseases, Ninth Revision*, code for rosacea that has not been validated. However, validity is supported by the high proportion of patients with dermatologist care.

In summary, an important proportion of patients (24.2%) received combination topical therapy. These medications are thought to work by similar mechanisms (anti-inflammatory, antioxidant, and modulation of kallikrein related peptidase 5), and to our knowledge, they have not been studied together. Also, combination therapy is not discussed in most guidelines.

We defined the cost of a topical medication as the sum of insurance payments, patient copay, and deductible per medication over the period of a year. We found that the mean annual cost of topical therapy for branded medications per person was nearly twice the cost of generics, despite the rise in generic drug costs.<sup>4</sup> Thus, there is an opportunity to save health care costs, which amount to nearly \$7.5 million annually for this cohort. Importantly, we analyzed the data from a health care system point of view, which provides more realistic overall cost analysis and is different from a patient point of view, in which, for example, coupons and other discounts reduce immediate out-of-pocket expense but increase societal cost.<sup>5</sup> Our analysis suggests that there is an opportunity to increase utilization of generic medications and that combination topical therapy is commonly used.

In addition, more research is needed to determine the most efficacious rosacea therapies. Topical therapy is common (used at a rate of 86% in this study) and may have lower adverse effects, yet topical agents can be more expensive than systemic medications.<sup>6</sup> This is pertinent, given that about 24% of patients received combination topical therapy. More cost-effectiveness studies for rosacea therapy could inform providers, patients, and future guidelines.

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#### The associations of depression and coping methods on health-related quality of life for those with hidradenitis suppurativa



*To the Editor:* Hidradenitis suppurativa (HS) is a chronic inflammatory disease that can have negative effects on health-related quality of life (HRQOL).<sup>1</sup> A previous study showed that resilience moderates the association between depression and HRQOL.<sup>2</sup> Resilience is usually triggered by an adverse event

or trauma.<sup>2</sup> Coping methods are skills that people can develop without a previous trauma. Maladaptive coping method can include substance abuse, which has been associated with HS.<sup>3</sup> The objective of this study was to investigate coping strategies used by people with HS and associations with depression and HRQOL.

This study received ethics board approval by all participating institutions. A cross-sectional survey study was performed with adults diagnosed with HS who were fluent in English or Danish. The survey included validated skin-specific HRQOL, depression, anxiety, and coping measures with demographic items. The survey was sent electronically and responses were collected from June 2016 to November 2017. Coping methods were grouped as: avoidant, problem-oriented, emotion-focused, and socially supported.<sup>4</sup> Descriptive statistics were used to characterize the sample. Dermatology Life Quality Index scores were reverse coded so that lower scores indicated lower HRQOL. Linear regression models used Dermatology Life Quality Index as the dependent variable and age, sex, disease severity, and coping methods as independent variables. Moderating and mediation effects were examined. Continuous variables were centered around the mean. Statistical significance was  $P \leq .05$ . All analyses were performed with SAS software (version 9.4; SAS Institute Inc, Cary, NC).

Overall, 322 surveys were emailed and 86.6% (279/322) responded; 229 respondents provided complete responses. A true response rate could not be determined because those who declined participation in-person were not tracked. Respondent characteristics are shown in Table I, and univariate associations are shown in Table II. Regression models identified avoidant coping as the only significant coping method when controlled for sex, anxiety, depression, and disease severity (Table III). A moderation effect, which describes if one variable (avoidant coping) influences the impact of another (depression) on the outcome, was not evident. A partial mediation model was significant (Fig 1) and indicates that avoidant coping mediates part of the effect of depression on lowering HRQOL. These results are a correlation, not causation, but may be interpreted that avoidant coping methods are a mechanism used by people with more depressive symptoms to lower HRQOL.

This study showed that avoidant coping partially mediates the negative impact of depression on HRQOL. Avoidant coping can include the use/abuse of substances (eg, alcohol, opioids, and cannabis) as well as the tendency to isolate oneself socially. Previous studies have shown that people with HS have higher risks of substance use disorders<sup>3</sup> and higher risks of feeling socially isolated.<sup>5</sup> Therapy to

**Table I.** Demographics of the study participants

| Variable                            | Mean $\pm$ SD   | n (%)      |
|-------------------------------------|-----------------|------------|
| Age, y                              | 40.8 $\pm$ 12.6 |            |
| Depressive symptoms (0-14)          | 9.1 $\pm$ 4.7   |            |
| HRQOL* (0-30) reverse coded         | 18.9 $\pm$ 8.6  |            |
| HRQOL* (0-30) untransformed         | 11.1 $\pm$ 8.6  |            |
| Sex                                 |                 |            |
| Female                              |                 | 190 (83)   |
| Male                                |                 | 39 (17)    |
| Education                           |                 |            |
| <12 years of school                 |                 | 14 (6.1)   |
| High school diploma or GED          |                 | 36 (15.8)  |
| Vocational education                |                 | 22 (9.7)   |
| Some college/associates             |                 | 64 (28.1)  |
| Bachelor's degree                   |                 | 68 (29.8)  |
| Graduate degree                     |                 | 24 (10.5)  |
| Depression and anxiety <sup>†</sup> |                 |            |
| No depression                       |                 | 93 (40.6)  |
| Borderline depression               |                 | 52 (22.7)  |
| Depression                          |                 | 84 (36.7)  |
| No anxiety                          |                 | 146 (63.8) |
| Borderline anxiety                  |                 | 51 (22.3)  |
| Anxiety                             |                 | 32 (14.0)  |

GED, General Educational Development; HRQOL, health-related quality of life; SD, standard deviation.

\*Assessed using the Dermatology Life Quality Index.

<sup>†</sup>Assessed using the Hospital Anxiety and Depression Scale.

**Table II.** Associations of avoidant coping and demographics

| Variable                       | Low scores, n (%) <sup>*</sup> | High scores, n (%) <sup>*</sup> | P value |
|--------------------------------|--------------------------------|---------------------------------|---------|
| Depression                     |                                |                                 |         |
| Absent                         | 77 (46.7)                      | 16 (25.0)                       | .0005   |
| Borderline                     | 40 (24.2)                      | 12 (18.7)                       |         |
| Depression                     | 48 (29.1)                      | 36 (56.3)                       |         |
| Anxiety                        |                                |                                 |         |
| Absent                         | 120 (72.7)                     | 26 (40.6)                       | <.001   |
| Borderline                     | 32 (19.4)                      | 19 (29.7)                       |         |
| Anxiety                        | 13 (7.9)                       | 19 (29.7)                       |         |
| Self-reported disease severity |                                |                                 |         |
| Low                            | 63 (38.2)                      | 12 (18.8)                       | .0021   |
| Moderate                       | 68 (41.2)                      | 26 (40.6)                       |         |
| High                           | 34 (20.6)                      | 26 (40.6)                       |         |
| Sex                            |                                |                                 |         |
| Male                           | 25 (15.2)                      | 14 (21.9)                       | .22     |
| Female                         | 140 (84.8)                     | 50 (78.1)                       |         |

\*Assessed using the Brief COPE Inventory. Scores were stratified into high and low based on the 75th percentile of the data. Those under the 75th percentile were coded as low; those greater than or equal to the 75th percentile were coded as high.

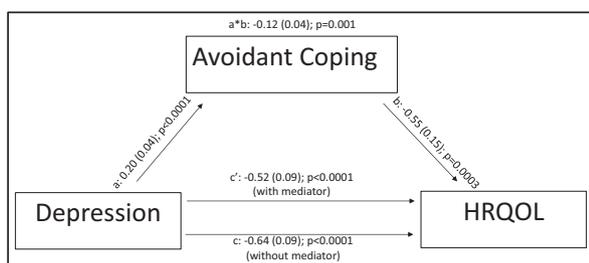
address avoidant coping methods could mitigate the effect of depression and contribute to improved HRQOL. There are some limitations to this study, including the use of self-reported and self-administered surveys, especially with regard to

**Table III.** Statistical significance of independent variables in regression model predicting health-related quality of life

| Variable                          | P value |
|-----------------------------------|---------|
| Sex                               | .03     |
| Depression*                       | .0002   |
| Anxiety*                          | .15     |
| Hidradenitis suppurativa severity | <.001   |
| Problem oriented <sup>†</sup>     | .08     |
| Avoidant <sup>†</sup>             | .006    |
| Socially supported <sup>†</sup>   | .65     |
| Emotion focused <sup>†</sup>      | .63     |

\*Assessed using the Hospital Anxiety and Depression Scale.

<sup>†</sup>Assessed using the Brief COPE Inventory.



**Fig 1.** The parameter estimates,  $\beta$  (SE);  $P$  value, are presented for the displayed associations. The findings suggest that higher depression score has a negative direct impact on HRQOL and is associated with higher avoidant coping scores, which also has a negative impact on HRQOL. A partial mediation model was significant and indicates that avoidant coping mediates part of the effect of depression on lowering HRQOL.

assessing disease severity. It is crucial to manage both the physical and mental aspects of HS, and this study highlights the importance of recognizing coping methods and depression as being impactful on HRQOL. Future research may investigate the impact of counseling, cognitive behavioral therapy, or support group involvement on patients' coping methods, depression, and HRQOL.

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#### Deficiency of sun protection advertising exists in consumer magazines across demographic groups and varies by target demographic



To the Editor: Millions of Americans subscribe to a variety of consumer magazines annually. Advertisements for dermatology-related products in consumer magazines provide readers with a source of health literacy.<sup>1</sup> This is particularly important for dermatologic conditions, such as skin cancer, which has a prevalence greater than all other cancers combined over the past 30 years, and which can carry associated morbidity and mortality.<sup>2</sup>