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Educational attainment is inversely correlated with hidradenitis suppurativa severity

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To the Editor:

Hidradenitis suppurativa (HS) is a debilitating disease that can cause painful inflammatory nodules and progress to form scars, abscesses, and sinus tracts [1]. Although clothing typically hides visible signs of disease, malodorous discharge from active lesions can stain clothing, leading to embarrassment. The subsequent disabling social stigma can impact patients' interpersonal relationships, education, and work [1]. Although current literature is limited, HS is associated with lower socioeconomic status [2,3]. Although the socioeconomic implications of HS have been investigated, there is a general lack of understanding on the implications of educational attainment in HS patients.

A total of 153 individuals with HS (ICD10 code: L73.2) were approached in clinic (N=30) between June and September 2018 and mail (N=123) between June and September 2018. Individuals who visited the Wake Forest Dermatology Clinics in the last 5 years with a mailing address on file were mailed questionnaires. A total of 67 surveys were returned (clinic (N=27) and mail (N=40)). Differences in disease and symptom severity and last clinical visit for HS treatment were compared to educational attainment. Disease severity was assessed using a validated self-assessment tool [4]. Data were analyzed using the SAS Software 9.4. Differences in group comparisons by mean score were analyzed with analysis of variance and student t test and

confirmed with non-parametric Kruskal-Wallis test. Differences in percent respondents were analyzed using Fisher's exact test.

Respondents were mean age 39, 90% female, and 57% African American; there was a mean of 13.3 years since initial diagnosis. Non-responders had comparable demographics (mean age: 36, 80% female, 38% African American). Disease severity (per Hurley score) was higher in respondents with lower educational attainment ($P<0.05$). Respondents with lower educational attainment reported more painful nodules ($P<0.05$). Respondents with a 4-year degree or higher (4-YR/higher) had less severe scarring ($P<0.05$). Respondents with 4-YR/higher reported a lower frequency of burning in areas of skin with HS ($P<0.05$). Respondents of all education levels reported their last clinical office visit for their HS was less than three months ago ($P>0.05$). Patients of all educational levels reported a similar frequency of itch and leakage of odorous fluid from their HS lesions ($P>0.05$ for both), (**Table 1**).

In our cohort, patients with greater HS disease and symptom severity were more likely to have a lower level of educational attainment. Our study could not determine the direction of causality between educational attainment and HS severity. Patients with higher educational attainment may have access to more resources due to economic security, fulfilling jobs, better social ties, and healthier lifestyles, allowing access to better treatments to decrease HS

Table 1. *Hidradenitis suppurativa sample characteristics.*

Age, years, mean +- SD	39.3 ± 13.7
Sex	
Female	60 (90)
Male	7 (10)
Race	
White	28 (42)
African American	38 (57)
Mean Hurley Score	P=0.03
HS/less	2.6 (12)
2-YR	2.1 (28)
4-YR/higher	1.8 (24)
Patients with >5 Painful Nodules	P=0.016
HS/less	77% (10)
2-YR	41% (11)
4-YR/higher	28% (7)
Patients with Severe Scarring	P=0.019
HS/less	54% (7)
2-YR	53% (15)
4-YR/higher	19% (5)
Burning ≥1-2 months and greater	P=0.016
HS/less	82% (9)
2-YR	73% (19)
4-YR/higher	40% (10)
Leakage of odorous fluid ≥1-2 months and greater	P=0.217
HS/less	100% (13)
2-YR	81% (21)
4-YR/higher	78% (18)
Itching ≥1-2 months and greater	p=0.134
HS/less	100% (12)
2-YR	86% (24)
4-YR/Higher	74% (17)

burden [5]. Alternatively, the debilitating nature of HS may limit the level of education patients achieve [5]. Although non-response rate is a limitation, the demographics of non-responders were similar to respondents. Incomplete or ambiguous responses by respondents is another limitation. Assessing HS severity using a validated self-assessment tool is a strength of the study design [4]. In our cohort, greater disease and symptom severity was inversely correlated with patient educational attainment.

Potential conflicts of interest

Feldman has received research, speaking and/or consulting support from Eli Lilly and Company, GlaxoSmithKline/Stiefel, AbbVie, Janssen, Alovtech, vTv Therapeutics, Bristol-Myers Squibb, Samsung, Pfizer, Boehringer Ingelheim, Amgen Inc, Dermavant, Arcutis, Novartis, Novan, UCB, Helsinn, Sun Pharma, Almirall, Galderma, Leo Pharma, Mylan, Celgene, Valeant, Menlo, Merck & Co, Qurient Forte, Arena, Biocon, Accordant, Argenx, Sanofi, Regeneron, the National Biological Corporation, Caremark, Advance Medical, Suncare Research, Informa, UpToDate and the National Psoriasis Foundation. He is also the founder and majority owner of www.DrScore.com [drscore.com] and founder and part owner of Causa Research. Rohan Singh, Lindsey Mohny, Aditi Senthilnathan, and Rita O Pichardo have no conflicts of interest to disclose.

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