

Social Determinants of Health and Comorbidities in Hidradenitis Suppurativa Using an Inclusive Database

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INTRODUCTION

- Hidradenitis Suppurativa (HS) presents a significant challenge due to its high prevalence of comorbidities and disproportionate impact on marginalized populations
- Specifically, patients of color have historically been underrepresented in biomedical research.^{2,3}
- Underscoring the need to identify associated comorbidities to mitigate their impact.¹

RESULTS

- There were significantly more females with HS than males (1,388 (77%) vs. 371 (21%), p<.001) (**Table 1**)
- Significant associations between Black/African American patients and HS (OR: 2.68; 95% CI: 2.42-2.96, p<0.001) (**Table 2**).
- The presence of Inflammatory Bowel Disease (OR: 1.77, 95% CI: 1.39-2.23, p < 0.001), Obstructive Sleep Apnea (OR: 1.18, 95% CI: 1.05-1.32, p = 0.006), and Type 2 Diabetes Mellitus (OR: 1.41, 95% CI: 1.25-1.58, p < 0.001), were also significantly associated with HS
- No association between HS and squamous cell carcinoma (OR: 0.87, 95% CI: 0.54-1.32, p=0.5), or lymphoma (OR: 1.04 0.71-1.46 p= 0.8)
- Contrary to previous screening recommendations⁵, psoriasis was significantly associated with HS (OR 1.75; 95% CI 1.42-2.12, p<0.001), indicating its possible relevance in screening among HS patients.
- Several comorbidities were found to have a significant association with HS, notably diagnoses impacted by social determinants of health such as Depression (OR 1.47; 95% CI 1.30-1.67; p<0.001), Anxiety (OR 1.63; 95% CI 1.44-1.85; p<0.001), Tobacco Use (OR 2.31; 95% CI 2.06-2.58; p<0.001), and Hypertension (OR 1.15; 95% CI 1.02-1.30; p = 0.026).

OBJECTIVES

- To identify comorbidity likelihoods among underrepresented groups in the United States, utilizing data from the *All of Us (AoU) Research Program*, a nation-wide database that encompasses diverse backgrounds in its patient cohort.⁴

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Characteristic	Overall N = 319,098 ¹	No Hidradenitis Suppurativa N = 317,296 ¹	Hidradenitis Suppurativa N = 1,802 ¹	p-value ²
Gender				<0.001
Female	190,070 (60%)	188,682 (59%)	1,388 (77%)	
Male	123,064 (39%)	122,693 (39%)	371 (21%)	
Neither or Unknown	5,964 (1.9%)	5,921 (1.9%)	43 (2.4%)	
Race				<0.001
White	226,615 (71%)	225,749 (71%)	866 (48%)	
Asian	14,162 (4.4%)	14,138 (4.5%)	24 (1.3%)	
Black or African American	78,321 (25%)	77,409 (24%)	912 (51%)	
Ethnicity				0.3
Not Hispanic or Latino	310,787 (97%)	309,039 (97%)	1,748 (97%)	
Hispanic or Latino	8,311 (2.6%)	8,257 (2.6%)	54 (3.0%)	
Comorbidities				
Lymphomas	3,256 (1.0%)	3,223 (1.0%)	33 (1.8%)	<0.001
Pyoderma gangrenosum	134 (<0.1%)	118 (<0.1%)	<20	<0.001
Obstructive sleep apnea	33,157 (10%)	32,566 (10%)	591 (33%)	<0.001
Depression	60,758 (19%)	59,712 (19%)	1,046 (58%)	<0.001
Tobacco Use	20,940 (6.6%)	20,377 (6.4%)	563 (31%)	<0.001
Hypertension	92,646 (29%)	91,495 (29%)	1,151 (64%)	<0.001
Diabetes mellitus, type 2	38,514 (12%)	37,794 (12%)	720 (40%)	<0.001
Anxiety	65,348 (20%)	64,295 (20%)	1,053 (58%)	<0.001
Obesity	57,262 (18%)	56,067 (18%)	1,195 (66%)	<0.001
Inflammatory bowel disease	4,300 (1.3%)	4,214 (1.3%)	86 (4.8%)	<0.001
Spondylarthritis	738 (0.2%)	719 (0.2%)	<20	<0.001
Pilonidal cyst	930 (0.3%)	834 (0.3%)	96 (5.3%)	<0.001
Acne	11,508 (3.6%)	11,104 (3.5%)	404 (22%)	<0.001
Psoriasis	6,067 (1.9%)	5,947 (1.9%)	120 (6.7%)	<0.001
Squamous Cell Carcinoma of the Skin	3,747 (1.2%)	3,726 (1.2%)	21 (1.2%)	>0.9
Zoster	8,582 (2.7%)	8,457 (2.7%)	125 (6.9%)	<0.001
Alzheimer's Disease	619 (0.2%)	617 (0.2%)	<20	0.6
Dissecting cellulitis of scalp	420 (0.1%)	386 (0.1%)	34 (1.9%)	<0.001
Non-alcoholic fatty liver disease	1,849 (0.6%)	1,811 (0.6%)	38 (2.1%)	<0.001
Polycystic ovary syndrome	2,384 (0.7%)	2,280 (0.7%)	104 (5.8%)	<0.001

Table 1: Comparison of demographic and comorbidity profiles between patients with and without Hidradenitis Suppurativa (HS).

Characteristic	OR ¹	95% CI ¹	p-value
Gender			
Female	—	—	
Male	0.55	0.49, 0.62	<0.001
Neither or Unknown	1.03	0.74, 1.39	0.9
Race			
White	—	—	
Asian	0.83	0.54, 1.23	0.4
Black or African American	2.68	2.42, 2.96	<0.001
Ethnicity			
Not Hispanic or Latino	—	—	
Hispanic or Latino	1.29	0.96, 1.69	0.081
Comorbidities			
Lymphomas	1.04	0.71, 1.46	0.8
Pyoderma gangrenosum	6.33	3.30, 11.4	<0.001
Obstructive sleep apnea	1.18	1.05, 1.32	0.006
Depression	1.47	1.30, 1.67	<0.001
Tobacco Use	2.31	2.06, 2.58	<0.001
Hypertension	1.15	1.02, 1.30	0.026
Diabetes mellitus, type 2	1.41	1.25, 1.58	<0.001
Anxiety	1.63	1.44, 1.85	<0.001
Obesity	3.12	2.76, 3.53	<0.001
Inflammatory bowel disease	1.77	1.39, 2.23	<0.001
Spondylarthritis	1.84	1.09, 2.92	0.014
Pilonidal cyst	7.88	6.15, 9.98	<0.001
Acne	3.43	3.02, 3.88	<0.001
Psoriasis	1.75	1.42, 2.12	<0.001
Squamous Cell Carcinoma of the Skin	0.87	0.54, 1.32	0.5
Zoster	1.12	0.92, 1.35	0.2
Alzheimer's Disease	0.31	0.05, 0.98	0.10
Dissecting cellulitis of scalp	4.42	2.93, 6.47	<0.001
Non-alcoholic fatty liver disease	1.15	0.80, 1.59	0.4
Polycystic ovary syndrome	2.41	1.92, 2.98	<0.001

¹OR = Odds Ratio, CI = Confidence Interval

Table 2: Multivariate logistic regression analysis that evaluates the likelihood of a patient being diagnosed with Hidradenitis Suppurativa adjusting for multiple gender, race, ethnicity, and comorbid conditions.

METHODS

- Cross-sectional analysis using the **All of Us Research database**, which utilizes data within individual electronic health records and survey data
- Comorbidity identification relied on source and standard concepts within the AoU framework
- Chi-square tests and multivariate logistic regression analyses were used to assess the likelihood of an HS diagnosis, adjusting for race, ethnicity, and comorbidities.
- All statistical analyses were performed using RStudio, version 4.1.2.

CONCLUSION

- Our findings reaffirm the complex intersectionality of Social Determinants of Health and Hidradenitis Suppurativa⁵
- There is a disproportionate burden of HS and comorbidities affected by Social Determinants of Health among underrepresented groups in the United States, particularly women and Black individuals.
- It is anticipated that by explicitly elucidating these relationships, more holistic and culturally sensitive approaches to HS management can be considered.

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