

LETTER TO THE EDITOR



Inpatient burden of hidradenitis suppurativa in the United States: analysis of the 2016 National Inpatient Sample

Dear Editor,

Hidradenitis suppurativa (HS) is a relapsing, chronic cutaneous disease characterized by acutely painful flares, which significantly reduce patient quality of life. Limited therapeutic options are available for HS, placing a substantial burden on the health-care system. Previous studies suggest that HS predominantly affects female patients and has higher utilization of inpatient care and emergency department visits compared to patients with other chronic inflammatory conditions such as psoriasis (1,2). Thus, our study objective was to describe clinical factors associated with the hospitalization of patients suffering from HS using a nationally representative dataset including over 7 million patient records.

We analyzed data from the Nationwide Inpatient Sample (NIS) from 2016. Administered by the Healthcare Cost and

Utilization Project (HCUP), the NIS data represents a stratified sample of approximately 20% of all inpatient hospitalizations within the United States. The sample weights provided by NIS were used to make nationally representative estimates. All patients with a primary diagnosis of HS (ICD-10 Code L73.2) were included and multivariate logistic regression was performed. The control group included all discharges with no diagnosis of hidradenitis suppurativa, and independent variables included patient age, gender, race/ethnicity, the median annual income of the hospital ZIP code, health insurance type, season of admission, hospital location, hospital teaching status, and bed size (Table 1).

A total of 7,135,090 discharges were captured in the NIS 2016 database, of which 812 had a primary diagnosis of HS, equal to ~4062 discharges nationally after weighting. HS

Table 1. Demographics of hospitalized patients with a diagnosis of hidradenitis suppurativa compared to the general patient population.

Variable	General population		Hidradenitis suppurativa		Adjusted OR	95% confidence interval	p-Value
	Est. frequency	Percent [95% confidence interval]	Est. frequency	Percent [95% confidence interval]			
Age, years							
0–17	5,479,694	15.3 [14.9–15.9]	204	5.01 [3.57–6.98]	0.14	0.99–0.21	<.001
18–39	7,423,759	20.8 [20.5–21.0]	1965	48.0 [44.6–51.4]	1.00 (ref)		
40–59	7,403,610	20.7 [20.5–21.0]	1515	37.0 [33.5–40.6]	0.65	0.54–0.79	<.001
60–79	10,515,272	29.4 [29.0–29.7]	385	9.40 [7.49–11.7]	0.13	0.09–0.17	<.001
>80	4,886,856	13.7 [13.5–13.9]	25	0.61 [0.26–1.45]	0.02	0.01–0.05	<.001
Race							
White	22,141,260	65.4 [64.4–66.3]	1145	29.0 [25.8–32.5]	1.00		
Black	5,145,981	15.2 [14.6–15.8]	2325	58.9 [55.1–62.7]	6.01	5.01–7.21	<.001
Hispanic	4,150,991	12.3 [11.6–12.9]	319	8.11 [6.36–10.3]	1.16	0.86–1.57	.331
Asian	1,037,020	3.06 [2.83–3.32]	30	0.76 [0.34–1.68]	0.53	0.24–1.19	.127
Native American	219,690	0.65 [0.56–0.75]	30	0.76 [0.34–1.68]	1.87	0.76–4.61	.174
Other	1,156,259	3.42 [3.12–3.74]	95	2.41 [1.45–3.98]	1.25	0.74–2.13	.407
Gender							
Female	15,439,345	43.3 [43.1–43.5]	1875	45.9 [42.2–49.7]	0.75	0.63–0.89	.001
Male	20,236,076	56.7 [56.5–56.9]	2210	54.1 [50.3–57.8]	1.00 (ref)		
Season							
Winter	8,914,808	25.0 [25.0–25.0]	960	23.4 [20.8–26.3]	1.00 (ref)		
Spring	9,015,068	25.3 [25.2–25.3]	920	22.5 [19.7–25.4]	0.94	0.77–1.15	.550
Summer	8,914,118	25.0 [25.0–25.0]	1060	25.9 [23.0–29.0]	1.10	0.91–1.34	.330
Fall	8,796,723	24.7 [24.6–24.7]	1145	28.0 [25.1–31.0]	1.20	1.00–1.45	.055
Income quartile							
First	10,774,519	30.7 [29.8–31.6]	1893	45.0 [41.9–50.0]	1.00		
Second	8,915,683	25.4 [24.8–26.0]	955	23.8 [20.8–27.2]	0.97	0.79–1.18	.747
Third	8,387,702	23.9 [23.4–24.5]	710	17.7 [14.9–20.9]	0.84	0.67–1.06	.142
Fourth	6,999,502	20.0 [19.0–20.9]	500	12.5 [10.2–15.3]	0.87	0.67–1.14	.326
Insurance							
Medicare	14,127,590	39.6 [39.1–40.1]	999	24.4 [21.1–28.0]	1.41	1.08–1.85	.011
Medicaid	8,241,094	23.1 [22.6–23.7]	1485	36.3 [32.6–40.1]	1.00	0.81–1.24	.991
Private	10,734,828	30.1 [29.6–30.6]	1230	30.0 [26.6–33.7]	1.00 (ref)		
Self-pay	1,377,983	3.87 [3.71–4.03]	245	6.23 [4.65–8.29]	0.95	0.68–1.34	.771
No charge	111,960	0.31 [0.27–0.37]	44	1.10 [0.54–2.2]	1.72	0.82–3.59	.150
Other	1,058,214	2.97 [2.77–3.19]	80	1.95 [1.20–3.17]	0.58	0.34–0.97	.039
Insured							
Yes	33,078,581	92.7 [92.5–92.9]	3715	90.7 [88.2–92.7]	1.00 (ref)		
No	1,377,983	3.86 [3.70–4.03]	254	6.23 [4.65–8.29]	1.00		
Other or no charge	1,170,174	3.28 [3.07–3.50]	125	3.05 [2.06–4.49]	1.00		

(continued)

Table 1. Continued.

Variable	General population		Hidradenitis suppurativa		Adjusted OR	95% confidence interval	p-Value
	Est. frequency	Percent [95% confidence interval]	Est. frequency	Percent [95% confidence interval]			
Region							
Northeast	6,599,084	18.5 [17.9–19.2]	705	17.2 [13.9–21.1]	1.00 (ref)		
Midwest	7,933,647	22.2 [21.6–22.9]	950	23.2 [19.2–27.8]	1.17	0.88–1.56	.276
South	14,041,126	39.3 [38.5–40.1]	1955	47.4 [42.4–53.1]	1.16	0.88–1.52	.296
West	7,122,759	20.0 [19.4–20.6]	485	11.8 [9.34–14.9]	0.94	0.67–1.32	.730
Teaching status							
Nonteaching	23,291,422	65.4 [64.7–66.1]	3265	79.7 [76.2–82.9]	1.00 (ref)		
Teaching	12,320,949	34.6 [33.9–35.3]	829	20.3 [17.1–23.8]	1.63	1.31–2.02	<.001
Hospital bed size							
Small	6,674,756	18.7 [18.1–19.3]	654	16.0 [13.0–19.5]	1.00 (ref)		
Medium	10,351,226	29.0 [28.4–29.7]	1105	27.0 [22.2–32.4]	1.03	0.75–1.42	.835
Large	18,632,207	52.2 [51.5–53.0]	2335	57.0 [51.7–62.2]	1.17	0.91–1.50	.220

Hidradenitis Suppurativa

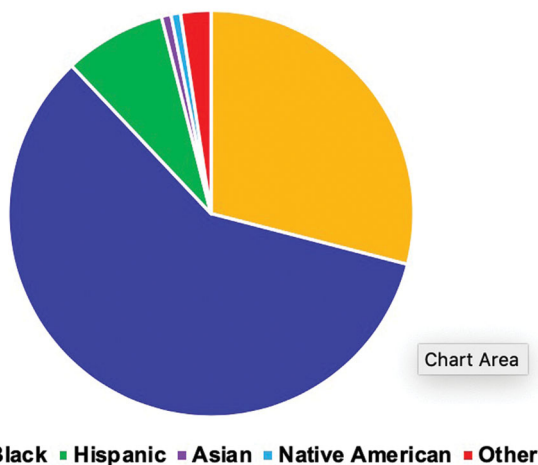


Figure 1. Racial distribution of patients with a diagnosis of hidradenitis suppurativa.

admissions were most common in age groups 18–39 and 40–59 years and less common in those over 60 years or under the age of 18 years ($p < .001$). Patients admitted with a diagnosis of HS were more likely to be black (OR 6.01, $p < .001$) than white, with no significant differences noted between other races (Figure 1). HS admissions were more likely in teaching hospitals (OR 1.63, $p < .001$), and the length of stay was significantly greater for patients with a diagnosis of HS as compared to patients without ($5.96 \text{ days} \pm 0.36$ versus 4.62 ± 0.02 days, $p < .001$). HS patients admitted incurred total charges of \$49 million, with an average cost of $\$12,089 \pm 629$ per HS patient. In contrast the average cost associated with non-HS patients was $\$11,728 \pm 106$, although this difference was not significant. Of note, patients admitted with HS were less likely to be female (OR 0.075, $p = .001$).

Our study demonstrates increased hospitalization rates in black patients with HS, suggesting racial disparities in the presentation of HS which is corroborated by previous studies (3,4).

Though HS is a more complex disease with a greater likelihood of presenting at teaching hospitals, it affects younger adults who are more likely to otherwise be healthy. To our knowledge, this is among the first reports demonstrating male predominance in the incidence of HS, which may indicate more complex disease in males requiring inpatient care or greater adherence to outpatient therapy by females who do not experience disease flares that are as severe.

Therefore, significant healthcare disparities exist in HS and the lack of effective therapeutic options likely contributes to the increased hospitalizations and burden of care. The limitations of this study include sample size, inclusion of only one year of data, and lack of independent chart review to assess variations in disease severity and treatments in the context of hospitalization. Future studies should investigate gender differences in the presentation of HS to confirm the association between gender and disease complexity and to assess the impact of comorbidities on this finding.

Disclosure statement

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