aggressively with the goal of thwarting progression and eventual debilitation. Taken together, patients with HS with moderate to severe disease and, potentially, those with milder HS, may be undertreated. Undertreatment is likely to result in additional morbidities such as symptoms reflecting progression in course, including pain, drainage, odor, and disease flares.[2]

In a prior study, having established dermatology care resulted in the greatest likelihood of initiating and escalating treatment for HS.[3] This observation is likely related to the expertise of dermatologists in evaluating and managing patients with HS, as well to familiarity with use of biologics. However, use of dermatology care by patients with HS in this analysis was low, as it was in a 2017 study in which only 22% of patients with HS were observed to have an established dermatologist.[4] Moreover, a third of HS patients having a dermatologist report difficulty accessing their doctor.[2] Accordingly, there is likely opportunity to improve morbidity in HS by augmenting awareness of the role of dermatologists, by improving access, and by our timely use of more effective interventions.

Whether men or younger patients with HS have greater disease severity or are more willing to accept biologic treatment warrants further study. Our inability to capture patients who did not seek care in health systems included in the database is a limitation.

In conclusion, we observed a very low percentage of patients with HS receiving prescription for Ada/Ifx, including those with a dermatology relationship. Biologic therapy may not be appropriate for all patients with moderate to severe HS. Nonetheless, our results suggest an opportunity to improve symptoms and disease course in HS by expanding the appropriate use of Ada/Ifx, consistent with efficacy data and treatment guidelines.

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REFERENCES

1. Strunk A, Midura M, Papagermanos V, Alloo A, Garg A. Validation of a case-finding algorithm for hidradenitis suppurativa using administrative coding from a clinical database. *Dermatology*. 2017;233(1):53-57.
2. Garg A, Neuren E, Cha D, et al. Evaluating patients' unmet needs in hidradenitis suppurativa: results from the Global VOICE project. *J Am Acad Dermatol*. 2019;82(2):366-376.
3. Garg A, Besen J, Legler A, Lam CS. Factors associated with point-of-care treatment decisions for hidradenitis suppurativa. *JAMA Dermatol*. 2016;152(5):553-557.
4. Garg A, Lavian J, Strunk A. Low utilization of the dermatology ambulatory encounter among patients with hidradenitis suppurativa: a population-based retrospective cohort analysis in the USA. *Dermatology*. 2018;233(5):396-398.

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Impact of hidradenitis suppurativa on work productivity and associated risk factors

To the Editor: Matusiak et al[1] showed that hidradenitis suppurativa (HS) caused absenteeism in 58.1%

Table I. Patient characteristics*

	Overall† (N = 843)	Workers‡ (n = 523)	Nonworkers‡ (n = 320)	*P* value§
Patient characteristics				
Sex				
Female, n (%)	604 (71.6)	373 (61.8)	231 (38.2)	.79
Age, y, mean (SD)	38.0 (12.2)	37.3 (11.3)	39.0 (13.6)	.06
Age at onset, y, median (IQR)	20.0 (15.0-27.0)	20.0 (15.0-27.0)	19.0 (15.0-28.0)	.62
Missing, n	27	15	12	
Disease duration, y, median (IQR)	12.5 (6.0-22.0)	12.8 (6.5-21.0)	12.1 (5.1-25.3)	.51
Missing, n	27	15	12	
BMI, kg/m^2, mean (SD)	28.7 (6.3)	28.5 (6.1)	29.1 (6.5)	.23
Current or ex-smoker, n (%)	643 (76.3)	390 (60.7)	253 (39.3)	.16
Positive family history	121 (23.8)	92 (76.0)	29 (24.0)	**<.001**
Unknown, n (%)	115 (22.6)	64 (55.7)	51 (44.3)	
Missing, n	335	195	180	
Education level, n (%)				
Low	148 (17.6)	65 (43.9)	83 (56.1)	
Medium	483 (57.3)	300 (62.1)	183 (37.9)	
High	212 (25.1)	158 (74.5)	54 (25.5)	**<.0001**
Comorbidities				
Rheumatoid arthritis, n (%)	25 (4.2)	12 (48.0)	13 (52.0)	.08
Missing, n	241	134	107	
Fibromyalgia, n (%)	9 (1.5)	2 (22.2)	7 (77.8)	**.008**
Missing, n	242	138	104	
Spondyloarthritis, n (%)	5 (0.9)	5 (100.0)	0 (0.0)	NP
Missing, n	286	139	147	
Crohn's disease, n (%)	35 (5.8)	19 (54.3)	16 (45.7)	.18
Missing, n	240	133	107	
Ulcerative colitis, n (%)	5 (0.8)	3 (60.0)	2 (40.0)	.82
Missing, n	247	137	110	
Psoriasis, n (%)	37 (6.2)	20 (54.1)	17 (45.9)	.17
Missing, n	247	139	108	
Previous depression, n (%)	119 (19.3)	53 (44.5)	66 (55.5)	**<.0001**
Missing, n	226	134	92	
Physician scores				
Hurley classification, n (%)				
Stage I	390 (46.3)	242 (62.1)	148 (37.9)	.18
Stage II	368 (43.7)	224 (60.9)	144 (39.1)	
Stage III	85 (10.0)	57 (67.1)	28 (32.9)	
Refined Hurley, n (%)				
Mild (IA, IIA)	363 (43.1)	227 (61.2)	137 (37.7)	
Moderate (IB, IIB)	195 (23.1)	132 (77.4)	63 (32.3)	
Severe (IC, IIC, III)	285 (33.8)	164 (57.5)	120 (42.1)	**.003**
IHS4, mean (SD)	9.4 (15.3)	9.5 (17.0)	9.1 (11.9)	.66
Mild, n (%)	366 (43.4)	223 (60.9)	144 (39.3)	.53
Moderate, n (%)	232 (27.5)	151 (65.1)	81 (34.9)	
Severe, n (%)	245 (29.1)	150 (61.2)	96 (39.2)	
Presence of draining sinus tracts, n (%)	349 (41.4)	217 (62.2)	132 (37.8)	.94
Affected locations, n (%)				
Axillae	295 (35.0)	192 (65.1)	102 (34.6)	.15
Groin/buttocks	510 (60.5)	298 (58.4)	212 (41.6)	**.008**
Patient-reported outcome measures				
DLQI, mean (SD)	11.5 (7.6)	10.8 (7.3)	12.6 (8.0)	**<.001**
EQ-5D-5 Level, median (IQR)	0.75 (0.62-0.84)	0.77 (0.66-0.87)	0.69 (0.49-0.81)	**<.001**
Missing, n	278	156	122	
EQ-5D VAS, median (IQR)	70.0 (51.0-80.0)	70.0 (60.0-80.0)	60.0 (45.0-75.0)	**<.001**
Missing, n	263	147	116	

Continued

Table I. Cont'd

	Overall[†] (N = 843)	Workers[‡] (n = 523)	Nonworkers[‡] (n = 320)	*P* value[§]
NRS Pain, mean (SD)	5.3 (3.0)	5.2 (2.9)	5.6 (3.0)	**.04**
NRS Pruritus, mean (SD)	4.1 (3.0)	3.8 (2.9)	4.6 (3.1)	**<.001**
NRS Severity, mean (SD)	6.0 (2.8)	5.8 (2.7)	6.2 (2.8)	.09
HADS Depression, median (IQR)	5.0 (2.0-9.0)	3.0 (1.0-6.0)	8.0 (3.0-11.0)	**<.001**
Missing, n	481	307	174	
HADS Anxiety, median (IQR)	6.0 (3.0-10.0)	5.0 (3.0-8.0)	8.0 (4.0-12.0)	**<.001**
Missing, n	481	307	174	

BMI, Body mass index; *DLQI*, Dermatology Life Quality Index; *HADS*, Hospital Anxiety and Depression Survey; *EQ-5D*, EuroQol—5 Dimensions; *IHS4*, International Hidradenitis Suppurativa Severity Score System; *IQR*, interquartile range; *NRS*, numeric rating scale; *SD*, standard deviation; *VAS*, visual analogue scale.

Bold data indicates statistical significance.

*Numbers and percentages may not add up to 100% because of rounding of pooled data.

[†]Percentages in this column are reported as percentages of the overall number of patients.

[‡]Percentages in these columns are presented as percentages of the variable on that row.

[§]*P*-value calculated between workers and nonworkers.

of patients. However, work impairment due to HS is not limited to absenteeism but could also lead to presenteeism (reduced productivity while at work) and at-work productivity loss (absenteeism plus presenteeism). Knowledge of which HS-related factors are associated with absenteeism, presenteeism, and at-work productivity loss is essential. Therefore, we aimed to assess differences between working and nonworking patients with HS; quantify absenteeism, presenteeism, and at-work productivity loss caused by HS; and identify associated risk factors.

All newly referred consecutive patients participating in the HiCARE (METc 2018/110), HiSure (METc 2015/074), and HiScreen (MEC-2016-246) registries between April 2015 and July 2019 were included. Patient characteristics, disease severity, patient-reported outcomes, and comorbidities were collected, and the Work Productivity and Activity Impairment questionnaire, specific health problem version, was used to assess the influence of HS on absenteeism, presenteeism, and at-work productivity loss. See the Supplemental Methods (available via Mendeley at https://doi.org/10.17632/6nmk748p89.1) for details on the between-group analyses, multiple imputations, and regression analyses.

Overall, 62.0% (523/843) of patients had work at the time of inclusion. The presence of inguinal/gluteal HS, increased HS severity, higher pain scores, the presence of fibromyalgia, and higher depression and anxiety scores were significantly more common in nonworkers (Table I). Twenty-six percent of working patients reported actual work time missed, with a median absenteeism of 0% (95% confidence interval [CI], 0.0-5.3). Workers reported a median presenteeism due to HS of 20% (95% CI, 0.0-50.0) and a median at-work productivity loss of 20.0% (95% CI, 0.0-69.0). Results from the univariate regressions analyses are presented in Supplemental Table I (available via Mendeley at https://doi.org/10.17632/6nmk748p89.1). Pain, Dermatology Life Quality Index, and EuroQol—5 Dimensions scores were significantly associated with presenteeism and at-work productivity loss in the multivariate regression models (Table II).

The level of absenteeism found in our study seems to be slightly lower than that found in a Danish study and substantially lower than that found in a Canadian study: 7.0% ± 21.2% and 14.5% ± 27.0%, respectively.[2,3] One explanation could be the larger proportion of nonworking patients in our study. In The Netherlands (and Denmark), adequate unemployment benefits are provided, which might lead to a higher percentage of nonworking patients and potentially lower levels of absenteeism among those still at work. This highlights that unemployment and work productivity data among patients with HS should be interpreted and extrapolated with caution because the results are highly influenced by the work climate and access to unemployment benefits in the study country.

Nonetheless, the factors associated with nonwork and at-work productivity loss in our study are modifiable through medical and/or surgical treatment, which could have a favorable effect on work status and productivity. However, this cross-sectional study does not allow for the assessment of causality in the found associations.

Overall, this study shows that several potentially modifiable factors such as inguinal/gluteal involvement, more severe disease, and higher depression and anxiety scores are more common among nonworkers. Additionally, among working patients, pain

Table II. Multivariate* linear and logistic regression analyses

Assessment	Absenteeism				Presenteeism			At-work productivity loss		
	n	*B*	OR (95% CI)	*P* value	n	*B* (95% CI)	*P* value	n	*B* (95% CI)	*P* value
IHS4								305	0.320 (−0.001 to 0.641)	.051
DLQI score	316	0.076	1.079 (1.024 to 1.137)	.004	302	1.720 (1.235 to 2.205)	<.001	305	1.904 (1.335 to 2.473)	<.001
EQ-5D index score	316	−1.703	0.182 (0.030 to 1.111)	.065	302	−23.147 (−40.483 to −5.811)	.009	305	−29.222 (−49.592 to −8.853)	.005
NRS Pain	316	0.146	1.157 (1.022 to 1.311)	.021	302	2.446 (1.464 to 3.428)	<.001	305	2.373 (1.189 to 3.556)	<.001

CI, Confidence interval; *DLQI*, Dermatology Life Quality Index; *EQ-5D*, EuroQol−5 Dimensions; *IHS4*, International Hidradenitis Suppurativa Severity Score System; *NRS*, numeric rating scale; *OR*, odds ratio.
*All multivariate models were corrected for sex, age, BMI, smoking, educational level, and smoking status.

and quality of life are associated with at-work productivity loss. This indicates the need for adequate treatment and pain management to limit work absence and reduce at-work productivity loss among patients with HS.

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REFERENCES

1. Matusiak Ł, Bieniek A, Szepietowski JC. Hidradenitis suppurativa markedly decreases quality of life and professional activity. *J Am Acad Dermatol*. 2010;62(4):706-708.

2. Yao Y, Jørgensen AR, Thomsen SF. Work productivity and activity impairment in patients with hidradenitis suppurativa: a cross-sectional study. *Int J Dermatol*. 2020;59(3):333-340.
3. Sandhu VK, Shah M, Piguet V, Alavi A. The impact of Hidradenitis suppurativa on work productivity and activity impairment. *Br J Dermatol*. 2020;182(5):1288-1290.

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Serum cytokine levels in patients with hidradenitis suppurativa vary with race

To the Editor: Hidradenitis suppurativa (HS) is a chronic condition characterized by painful nodules and abscesses in intertriginous areas that can lead to disfigurement. The presumed immunopathogenesis of HS involves an exaggerated response to ruptured follicles. Aberrant cytokine expression has been demonstrated in the serum of patients with HS, specifically, increased serum tumor necrosis factor (TNF)-α,[1] interleukin (IL)-17,[2] and IL-1β.[3] Although biologics targeting TNF-α and IL-1 have shown success, the quest for additional treatment options remains ongoing.

In this institutional review board–approved study, we aimed to characterize serum cytokine profiles in HS. Adults with HS and healthy age-, sex-, and race-matched control individuals were recruited from a tertiary care dermatology clinic in New Orleans, Louisiana. Individuals with active infection, cancer, or other autoimmune disease were excluded. Additionally, those with use of systemic medication (systemic antibiotics, antiandrogen therapy, immunosuppressants, immunomodulators) within 1 month of sample collection, or biologics within 6 months, were excluded.

Demographic information and blood samples were collected. Twenty-five cytokines were quantified in duplicate using a multiplex assay (Millipore Human TH17 Magnetic Bead Panel [Millipore, Burlington, MA] and Luminex xMAP technology [Luminex, Austin, TX]).

Demographics were analyzed using a 2-tailed *t* test for continuous variables and chi-square and Fisher's exact tests for noncontinuous variables. Mann-Whitney and Kruskal-Wallis tests were used when evaluating cytokine levels. For data below the detection limit, a value of 0 was used. A *P* value of $\leq .05$ was considered significant.

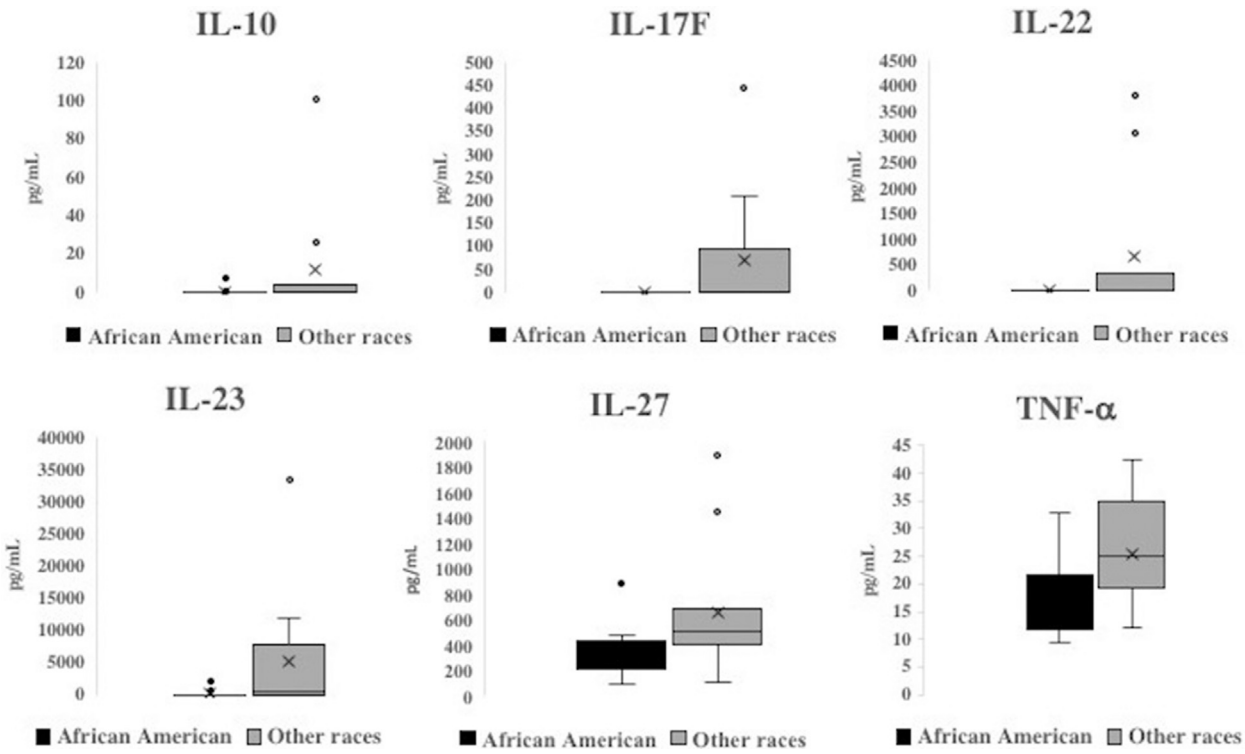

Fig 1. Cytokine levels in African American patients versus those of other races. A comparison of serum concentrations of TNF-α, IL-22, IL-23, IL-17F, IL-27, and IL-10 in African American patients (n = 16) and those of other races (n = 11) with hidradenitis suppurativa. *IL*, Interleukin; *TNF*, tumor necrosis factor.