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JAMA DERMATOLOGY RESEARCH LETTER

Patient-reported influences on COVID-19 vaccine acceptance and hesitancy amongst patients with hidradenitis suppurativa and psoriasis internationally

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Dear Editor, COVID-19 continues to pose a risk to patients with hidradenitis suppurativa (HS) due to the high prevalence of comorbidities associated with severe COVID-19 disease.¹ Although vaccination is an effective primary defense against adverse outcomes, global COVID-19 vaccine uptake is approximately 69%.² Limited data exist on HS patients' attitudes toward the COVID-19 vaccine. We aimed to characterize perspectives on COVID-19 vaccination among HS patients. International respondents from 20 HS online support groups were recruited to complete a voluntary, anonymous, online cross-sectional survey from 10/25-11/21/2021 to obtain perspectives from people with HS who may and may not access healthcare. Neutral language was used in recruitment and survey materials to assess views on COVID-19 vaccination. Eligible respondents confirmed HS diagnosis, provided COVID-19 vaccination status, and completed >20% of the survey. Respondents who received >1 dose of the COVID-19 vaccine or were planning to become vaccinated were classified as vaccine-accepting, while those who refused the vaccine or were indecisive regarding whether they would become vaccinated were considered vaccine-hesitant. Respondents provided pertinent medical history including comorbidities and current use of immunosuppressants and/or biologics. We used the Kruskal-Wallis, Pearson's χ^2 and Fisher's exact tests to examine relationships between vaccination status, vaccine beliefs, medical history, and satisfaction with HS care. Implied consent was obtained. This study was approved by the UCSF Institutional Review Board.

Of 1533 survey entries, 1323 responses were eligible (female: 89.0%, mean [SD] age: 40.2 [10.8] years). Most respondents resided in the United States (857/1323, 64.8%), United Kingdom (93/1323, 7.0%), or Canada (70/1323, 5.3%); and identified as White (889/1323, 67.2%), Black (107/1323, 8.1%), or Hispanic (82/1323, 6.2%). The most common comorbidities were obesity (877/1214, 72.2%), current smoking (485/1320, 36.7%), and cardiovascular disease (315/1116, 28.2%). A minority of respondents reported treating their HS with biologics (342/1323, 25.9%) or immunosuppressants (217/1323, 16.4%). The COVID-19 vaccine acceptance rate was 79.7%. Compared to COVID-19 vaccine-accepting respondents, COVID-19 vaccine-hesitant respondents more frequently reported being 'dissatisfied' or 'very dissatisfied' with their HS care on a 5-point Likert scale (vaccine-accepting 43.4% (554/1276) vs vaccine-hesitant 51.1% (24/47); $P=0.01$) and previously declining influenza vaccination (34.0% (434/1276) vs 53.2% (25/47); $P<0.01$). COVID-19 vaccine-hesitant respondents were less likely to report experiencing a close relative or friend who had severe COVID-19 infection (51.5% (635/1233) vs 23.4% (11/47); $P<0.001$). Common motivators for vaccination were family safety (346/1045, 33.1%), personal safety (327/1045, 31.3%), and avoiding serious infection (251/1045, 24.0%). The most frequent concerns were whether the vaccines were well-studied (233/1182, 19.7%), vaccine-induced HS flare (152/1182, 12.9%), and side effects (138/1182, 11.7%). Vaccination correlated with beliefs about the importance of vaccines for society (median (IQR) vaccine-accepting: 9 (5, 10) vs vaccine-hesitant: 6 (5, 8); $P<0.001$) and oneself (10 (5.5, 10) vs 5 (5, 8); $P<0.001$), and trust in vaccines (8 (5, 10) vs 4 (2.5, 6); $P<0.001$).

Notably, vaccine hesitancy was not associated with immunosuppressant use (vaccine-accepting: 16.9% (208/1233) vs vaccine-hesitant: 20.5% (9/44); $P=0.5$), biologic use (26.8% (329/1233) vs 29.6% (13/44); $P=0.7$), comorbidities associated with greater COVID-19 severity (77.6% (985/1269) vs 73.9% (34/46); $P=0.6$), or prior COVID-19 infection (15.1% (184/1216) vs 18.4% (7/38); $P=0.6$). Literature examining vaccine acceptance rates and contributing factors in HS patients is sparse. However, consistent with the rheumatology literature, we found a relationship

between COVID-19 vaccine acceptance and prior history of influenza vaccination and general trust in vaccines.^{5,6} We similarly found no relationship between vaccine acceptance and previous COVID-19 infection, comorbidity, or use of biologics or immunosuppressants.^{5,6} 11 HS patients commonly report dissatisfaction with their care.⁴ Dissatisfaction with HS care has been associated with treatment by a non-dermatologist, using nonbiologic therapies, number of comorbidities, and disease flare frequency.⁴ In this study, Over 40% of patients were ‘dissatisfied’ or ‘very dissatisfied’ with their HS treatment, emphasizing the pervasiveness of this problem. We report higher rates of COVID-19 vaccine hesitancy amongst HS patients who expressed dissatisfaction with their HS care. This finding is supported by a previous study in psoriasis showing higher rates of vaccine hesitancy amongst psoriasis patients with disrupted access to specialty care.³ These data suggest an association between the quality of prior healthcare experiences and patients’ willingness to adopt public health guidance, and provide additional impetus to improve care satisfaction for HS patients.

Although unlikely to affect the validity of our findings, we were unable to calculate a response rate for this survey as it was administered to online support groups. While many of our respondents identified with female sex, White race, and American nationality, the rates of comorbidities, use of biologics, and use of immunosuppressants found in this study are similar to those reported in the literature, thus improving the generalizability of our findings.^{7,8}

REFERENCES

1. Khan S, Karponis D, Wali G. Outcomes of patients with chronic plaque psoriasis and hidradenitis suppurativa on biologic therapy during the Covid-19 pandemic: A UK dermatology tertiary centre experience. *Skin Health Dis* 2021; 1:e54.
- 2 Mathieu E, Ritchie H, Rodés-Guirao L, et al. Coronavirus Pandemic (COVID-19). Our World Data 2020.URL <https://ourworldindata.org/covid-vaccinations> [accessed on 17 January 2023].
- 3 Bechman K, Cook ES, Dand N, et al. Vaccine hesitancy and access to psoriasis care during the COVID-19 pandemic: findings from a global patient-reported cross-sectional survey. *Br J Dermatol* 2022; 187:254–6.
- 4 Midgett B, Strunk A, Akilov O, et al. Factors associated with treatment satisfaction in patients with hidradenitis suppurativa: results from the Global VOICE project. *Br J Dermatol* 2022; 187:927–35.
- 5 Ko T, Dendle C, Woolley I, et al. SARS-COV-2 vaccine acceptance in patients with rheumatic diseases: a cross-sectional study. *Hum Vaccines Immunother*; 17:4048–56.
- 6 Felten R, Dubois M, Ugarte-Gil MF, et al. Vaccination against COVID-19: Expectations and concerns of patients with autoimmune and rheumatic diseases. *Lancet Rheumatol* 2021; 3:e243–5.

- 7 Garg A, Neuren E, Cha D, et al. Evaluating patients' unmet needs in hidradenitis suppurativa: Results from the Global Survey Of Impact and Healthcare Needs (VOICE) Project. *J Am Acad Dermatol* 2020; 82:366–76.
- 8 Garg A, Malviya N, Strunk A, et al. Comorbidity screening in hidradenitis suppurativa: Evidence-based recommendations from the US and Canadian Hidradenitis Suppurativa Foundations. *J Am Acad Dermatol* 2022; 86:1092–101.

Table 1. Respondent characteristics (n=1,323)

Characteristics	N (%)
Age, y (mean [SD])	40.2 [10.8]
Sex-assigned-at-birth, n (%)	
Female	1,177 (94.6%)
Male	65 (5.2%)
Prefer not to answer	2 (0.2%)
Race/ethnicity, n (%)	
White	889 (67.2%)
Black	107 (8.1%)
Hispanic	82 (6.2%)
Asian	35 (2.6%)
Native American/Alaska Native	6 (0.5%)
Native Hawaiian/Pacific Islander	4 (0.3%)
Other/Prefer not to answer/Unknown	200 (15.1%)
Country	
United States	857 (64.8%)
United Kingdom	93 (7.0%)
Canada	70 (5.3%)
Australia	26 (2.0%)
Denmark	21 (1.6%)
Ireland	20 (1.5%)
Other ^a / Prefer not to answer	236 (17.8%)
COVID-19 vaccination status	
Vaccinated	1,017 (76.9%)
Planning to become vaccinated	38 (2.9%)
Declined vaccination	259 (19.6%)
Undecided	9 (0.7%)
Comorbidities	
Obesity, n=1,214	877 (72.2%)
Smoking, n=1,320	778 (58.9%)
Cardiovascular disease, n=1,116	315 (28.2%)
Pulmonary disease, n=1,086	293 (27.0%)
Diabetes, n=1,273	221 (17.4%)
Psoriasis, n=1,323	120 (9.1%)
Renal failure, n=1,034	9 (0.9%)
Treatments	
Biologic agent	342 (25.9%)
Immunosuppressing agent	217 (16.4%)
Concerns about COVID-19 vaccine, n=1,182	
No concerns	406 (34.4%)
Not well studied	233 (19.7%)
Induce an HS flare	152 (12.9%)
Side effects	138 (17.3%)
First-time technology	70 (5.9%)
Poor governmental management of COVID pandemic	70 (5.9%)
The vaccine may trigger another health condition	61 (5.6%)
Other	56 (4.7%)
Motivators for COVID-19 vaccination, n=1,045	
Family safety	346 (33.1%)
Personal safety	327 (31.3%)
To avoid serious infection	251 (24.0%)
Required by school/employer	54 (5.2%)
Travel	31 (3.0%)
To avoid being contagious	12 (1.2%)
Other	24 (2.3%)

^a Includes 18 respondents from Mexico; 9 from Slovenia; 8 from New Zealand; 6 from Greece; 5 each from South Africa and Sweden; 4 from Brazil; 3 each from Belgium and India; 2 each from Isle of Man, Malaysia, Netherlands, Philippines, and Spain; 1 each from Austria, France, Germany, Iceland, Japan, Kenya, Malta, Morocco, Occupied Palestinian Territory, Portugal, Romania, Saint Kitts and Nevis, Seychelles, and Singapore.

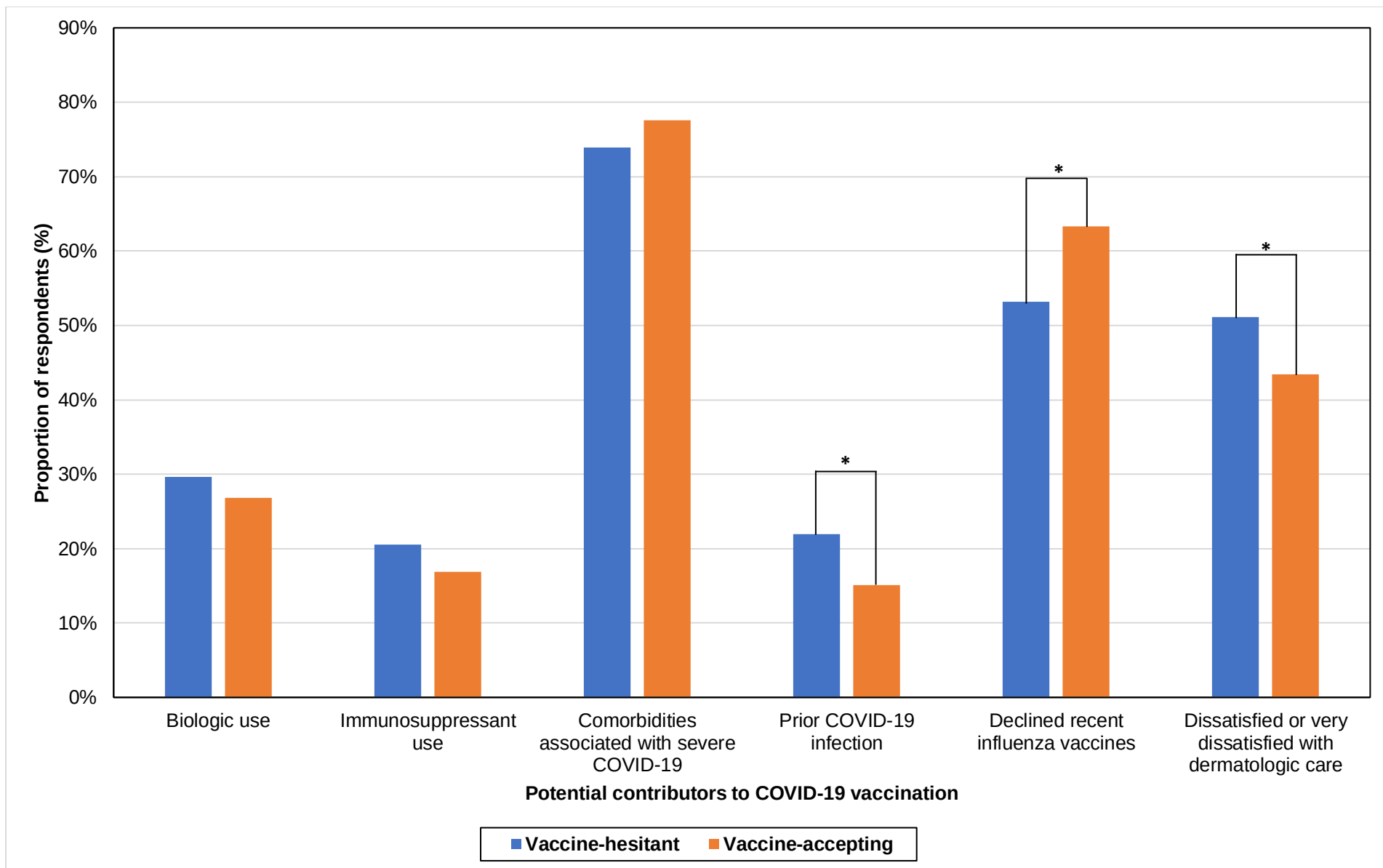


Figure 1. Potential contributors to COVID-19 vaccination by vaccination status

This bar graph illustrates the prevalence of potential contributors to COVID-19 vaccination among survey respondents who were vaccine-hesitant compared to those who were vaccine-accepting. Respondents who reported prior COVID-19 infection did not receive the influenza vaccine in previous years or were dissatisfied or very dissatisfied with their dermatologic care were more likely to be vaccine-hesitant. No relationship was observed between vaccination status and the use of biologics or immunosuppressants, nor with the presence of comorbidities associated with severe COVID-19 infection.

* Indicates significant relationships