

## ORIGINAL ARTICLE

# Impact of the COVID-19 pandemic on patients with hidradenitis suppurativa

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## Abstract

The COVID-19 pandemic caused collateral damage to patients with acute and chronic conditions. In this mono-centre cross-sectional study, we sought to evaluate the impact of the COVID-19 pandemic on patients with hidradenitis suppurativa (HS). In June 2020, we sent an anonymous survey to 109 patients, who were diagnosed with HS in our outpatient clinic from May 2018 to April 2020. Fifty patients (45.9%) completed and returned the survey. Forty-five participants (90.0%) denied any cancellation of hospitalisation due to the COVID-19 pandemic. Hospitalisation was postponed in 8% of cases and cancelled in 2%. Compared to prior to the pandemic, fewer patients consulted their primary physician for changing wound dressings and more changed the dressings themselves or were assisted by their family members. 13% of patients avoided doctor visits due to fear of COVID-19 and 26.1% minimised doctor visits. The Dermatology Life Quality Index showed a moderate to very severe impact on patients' Quality of Life (mean score = 10.06). Only one patient used telemedicine. Due to limited access to primary care and fear of COVID-19, the pandemic had a detectable impact on the hospital management of patients with HS in our facility. Telemedicine still plays a negligible role in primary wound care.

## KEYWORDS

access to health care, public health, quarantine, SARS-CoV-2 infection, telemedicine

## Key Messages

- the COVID-19 pandemic had a detectable impact on the hospital management of patients with HS in our survey. Telemedicine still plays a negligible role in primary wound care
- our study aimed to evaluate the impact of the COVID-19 pandemic on patients with hidradenitis suppurativa in our university-based medical facility in Germany. An anonymous survey was sent to 109 patients, diagnosed with HS in our outpatient clinic from May 2018 to April 2020. All statistics

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were performed in R (version 3.6.0, 2010, R Foundation for Statistical Computing, Vienna, Austria). Figures were created by using the R package: ggplot2

- the impact of COVID-19 pandemic on the hospital management of patients with HS was relevant, because hospitalisation was postponed in 8% of cases and cancelled in 2%, fewer patients consulted their primary physician for changing wound dressings, and the Dermatology Life Quality Index showed a moderate to very severe impact on patients' Quality of Life (mean score = 10.06). Only one patient used telemedicine

## 1 | INTRODUCTION

The Coronavirus disease 2019 (COVID-19) pandemic remains a strong challenge for health care systems around the world. Collateral damage to patients with other conditions, such as myocardial infarction, stroke, hyperglycaemic crisis,<sup>1-3</sup> cancer<sup>4</sup> or even disabilities<sup>5</sup> have been reported.

The management of hidradenitis suppurativa (HS) deserves special consideration in the context of the COVID-19 pandemic.<sup>6</sup>

HS is a chronic, inflammatory, recurrent, debilitating skin disease of the hair follicle in areas rich in apocrine glands. It typically starts in early adulthood with painful, deep-seated, inflamed lesions, including inflamed nodules, abscesses, pus-discharging tunnels, and consequent scarring in the intertriginous areas of the body, most commonly the axillae, inguinal and anogenital regions. The estimated prevalence of HS is around 1% in Europe.<sup>7-9</sup>

HS is not considered a specific risk factor for COVID-19,<sup>6,10</sup> yet several aspects might potentially increase the risk for severe COVID-19 and poor outcomes for patients with HS.

First, HS is associated with diabetes and obesity, comorbidities that may predispose to more severe COVID-19 infections.<sup>9</sup> Second, cigarette smoking is a recognised risk factor for both the development of HS and severe disease,<sup>8</sup> although its exact role in COVID-19 still needs further elucidation.<sup>11,12</sup> Finally, the poor recognition of disease among non-dermatologists might impact the medical care of HS patients.<sup>6,13</sup>

In this survey, we sought to evaluate the impact of the COVID-19 pandemic on HS patients at our institution.

## 2 | METHODS

### 2.1 | Study design and population

Patients diagnosed with HS between May 2018 and April 2020 in the outpatient clinic of the Department of Dermatology and Allergy, University Hospital, LMU

(Ludwig Maximilian University) Munich, Germany, were contacted in June 2020 by letter and asked for participation in this questionnaire-based cross-sectional study. The ethics committee of the medical faculty at LMU approved the study (permit number: 20-390 KB), which was performed in accordance with the Helsinki Declaration of 1975.

### 2.2 | Study assessments and measures

An anonymous structured questionnaire was used for data collection. Information on (a) demographics (gender, age, educational background, health insurance); (b) number of medications; (c) treatment for HS; (d) smoking; (e) in-patient treatments; (f) medical care and condition during the COVID-19 pandemic were obtained. In addition, this survey included assessment using the Dermatology Life Quality Index (DLQI) score.

DLQI is a widely used questionnaire for measuring the impact of skin disease on adult patients' Quality of Life (QoL). The DLQI consists of 10 items covering six basic topics: symptoms and feelings, daily activities, leisure, work or school, personal relationships and treatment, each rated on a 4-point Likert scale. DLQI is calculated by collecting the sum of the scores of the above-mentioned questions. Higher scores are associated with greater impairment of QoL. The DLQI score is displayed in percentage ranging from a minimum of '0' to a maximum of '30'.<sup>14,15</sup>

### 2.3 | Statistics

For descriptive statistics, mean with 95% confidence interval was calculated for numerical data, while proportions were calculated for categorical variables. McNemar's Chi-squared test was applied to test for a difference in the person performing the wound dressing

before and during COVID-19. Whether the transportation time correlates with limited doctor access was tested by calculating Goodman-Kruskal's gamma. Group differences in the DLQI score were tested by the application of independent samples *t*-test. All statistics were performed in R (version 3.6.0, 2010, R Foundation for Statistical Computing, Vienna, Austria). Figures were created by using the R package: ggplot2.

### 3 | RESULTS

A total of 50 patients completed the survey, which corresponds to a return rate of 45.9%. However, not all participants answered every question.

Slightly more participants were female (53.1%). Most patients (37.4%) had general education or visited middle school, and 10 (20.8%) experienced higher education. Fifteen participants (31.3%) have had a vocational training or specialisation, while seven (14.6%) held a university degree. All patients were covered by public health insurance. A complete overview of our sample can be found in Table 1.

Twenty-one participants (42.0%) were hospitalised at least once in the previous 12 months, in 30% of cases due to HS.

As to influence of the COVID-19 pandemic on work conditions, 12 patients (24%) worked remotely during the lockdown and 30 patients (60%) went to work as usual, while for 8 patients (16%) the question was not applicable.

Forty-five (90.0%) participants denied any cancellation of hospitalisation due to the COVID-19 pandemic. With regard to the restricted access to medical services for HS patients, the data indicated an increase in the number of patients who could or did not perform wound dressing during the pandemic (9.3%), in comparison to 0% before the pandemic. Similarly, the amount of wound dressing performed by a primary care physician decreased from 9 (19.6%) prior to the pandemic to two (4.7%) during the first lockdown.

Wound care performed in wound centres or ambulatory care, performed by nursing personnel, remained stable. Differences were detected in the person performing wound dressing before and after the implementation of public lockdown. The number of patients in which wound dressing was performed by patients themselves or by relatives increased, while the number of patients in which changes of wound dressing were performed by primary care physicians dropped dramatically. Results are shown in Figure 1.

We further assessed whether the frequency of doctor visits may have been impacted by the pandemic

**TABLE 1** Demographic and clinical characteristics of the study participants

	n = replies	%
Gender	49	
Female	26	53.1
Male	23	46.9
Age	49	
<20	2	4.1
20-29	8	16.3
30-39	14	28.6
40-49	14	28.6
50 or older	11	22.4
School education	48	
General education (9 y)	7	14.6
Middle school (10 y)	9	18.8
Higher education (12-13 y)	10	20.8
Vocational training or specialisation	15	31.3
University degree	7	14.6
Medication per day	50	
None	17	34.0
1-4	27	54.0
5-10	6	12.0
10 or more	0	0
HS treatment	49	
None	29	59.2
Pain medication	2	4.1
Antibiotics	9	18.4
Adalimumab	2	4.1
Other	7	14.3
Smoking behaviour	49	
Currently smoking	26	53.1
Never smoked	13	26.5
Ex-smokers	10	20.4
Smoking behaviour in COVID-19 pandemic	38	
Non-smokers	13	34.2
Largely increased	0	0
Moderate increased	2	5.3
No increase	14	36.8
Slightly reduced	5	13.2
Importantly reduced	4	10.5
Hospitalisation within 12 mo prior to study	50	
None	29	58.0
Once	12	24.0

TABLE 1 (Continued)

	n = replies	%
Twice	5	10.0
Three times	2	4.0
Three times or more	2	4.0
Hospitalisation due to HS within 12 mo prior to study	50	
None	29	58.0
Once	12	24.0
Twice	5	10.0
Three times	2	4.0
Three times or more	2	4.0
Cancellation of hospitalisation	50	
Yes, without fixing new appointment	4	8.0
Yes, a new appointment was fixed	1	2.0
No cancellation was made	45	90.0
Performance of wound dressing before COVID-19	46	
No wound dressing performed	0	0
Wound dressing performed personally or by relatives	33	71.7
In ambulatory care	1	2.2
By primary care physician	9	19.6
In wound center	3	6.5
Performance of wound dressing during COVID-19	43	
No wound dressing performed	4	9.3
Wound dressing performed personally or by relatives	33	76.7
In ambulatory care	1	2.3
By primary care physician	2	4.7
In wound center	3	7.0
Travel time to the treating physician	47	
Less than 15 min	11	23.4
15-30 min	13	27.7
30-60 min	18	38.3
More than 60 min	5	10.6
Medical consultations	46	
Yes, as usual	25	54.3
Yes, less frequently	12	26.1
Yes, domiciliary visit	0	0
Yes, via telemedicine	1	2.2
No, prohibited by my doctor or hospital	2	4.3
No, by fear of getting infected by COVID-19	6	13.0

(Continues)

TABLE 1 (Continued)

	n = replies	%
Home office	50	
Yes	12	24.0
No	30	60.0
Not applicable	8	16.0
Fear of getting infected by COVID-19 due to HS or HS therapy	50	
Yes	9	18.0
No	28	56.0
Do not know	13	26.0
Fear of becoming severely affected by COVID-19 due to HS or HS therapy	50	
Yes	9	18.0
No	24	48.0
Do not know	17	34.0

Note: Demographic and clinical characteristics of study population are shown with partial and total number of replies (n) in absolute and percentage value.

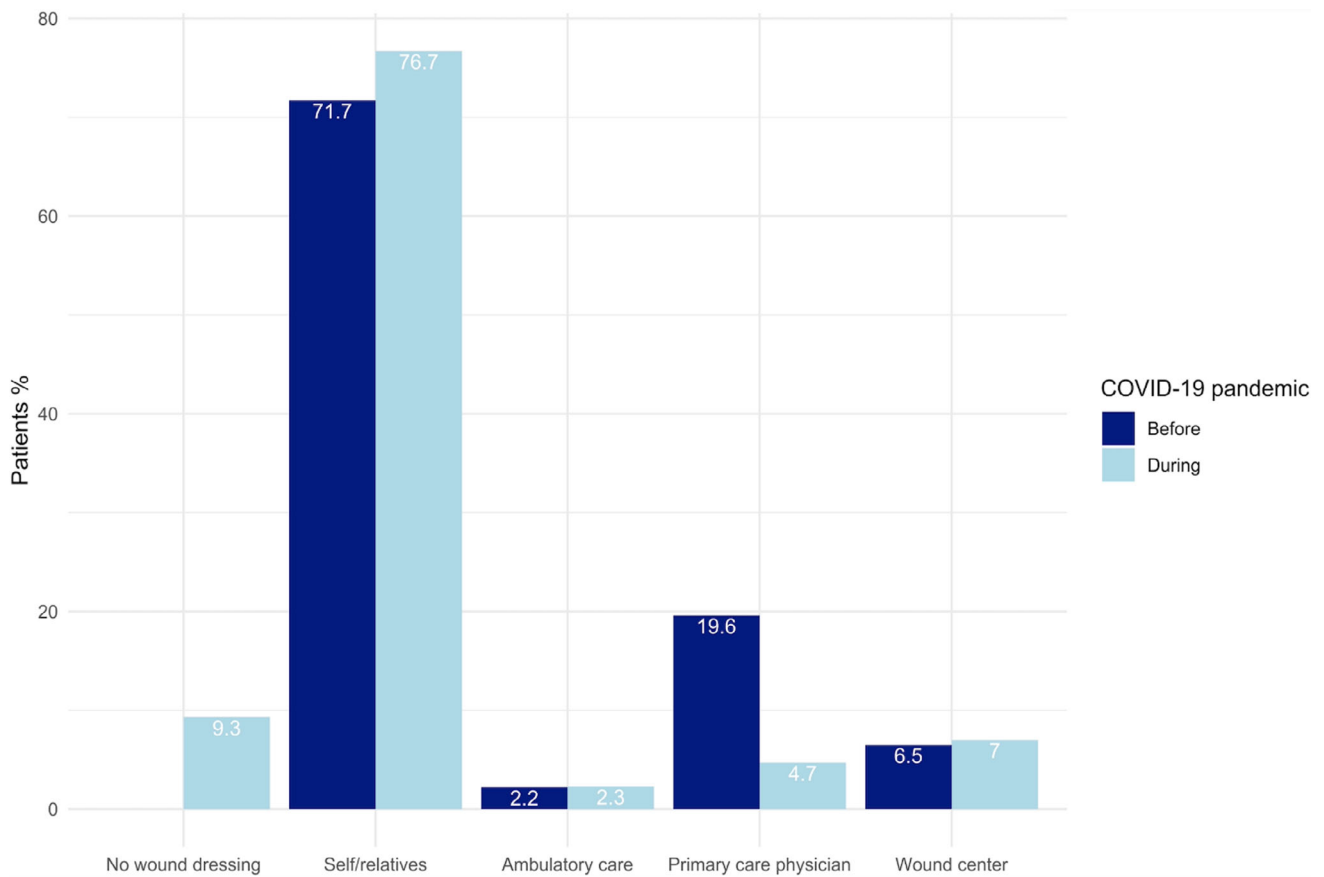
(Figure 2) and if the use of public transport or travel time may have had an influence.

54.3% of participants reported visiting their physician as usual, while 26.1% visited their physician less frequently than usual. 4.3% could not see their physician due to pandemic-related restrictions and 13% decided not to visit the doctor due to fear of exposure to COVID-19. No patient was visited by doctors at home and telemedicine was used in only one case.

The mean DLQI of our patients who responded to the survey was 10.06, corresponding to a moderate to large effect on patients' QoL. Only 14% of patients declared that HS had no effect on their lives. For 28% of the patients the effect was small and for 18% moderate. For the remaining patients (40%), HS had a major impact: 28% declaring a very large and 12% an extremely large impact on their QoL (Table 2).

Moreover, we investigated if working remotely, limitation in access to physician's consultation or in access to professional wound dressing, cancellation of hospitalisation, smoking (Figure 3) or gender differences influenced the DLQI. An independent samples *t*-test showed no significant difference among all criteria above.

Furthermore, we assessed the sensation of fear associated with the COVID-19 pandemic in relationship to HS and its therapy. Nine respondents (19%) admitted fear of infection with COVID-19 due to HS or HS treatment. Similarly, nine patients (18%) claimed to fear a severe course of COVID-19 due to HS or HS treatment.



**FIGURE 1** Wound dressing performance in hidradenitis suppurativa (HS) patients before and during the COVID-19 pandemic. While the number of changes of wound dressing remained stable in ambulatory care and hospital-based wound centers, the amount of wound dressing performed by patients themselves or by relatives increased, and the number of changes of wound dressing by primary care physicians dropped dramatically



**FIGURE 2** Medical consultations during the COVID-19 pandemic

#### 4 | DISCUSSION

This cross-sectional study provides evidence of the impact of the COVID-19 pandemic on patients with HS in a university-based medical facility in Germany.

Our data revealed a significant decline in access to primary care physicians and, to a lesser extent, a reduced hospitalisation rate of HS patients during the pandemic. However, access to nursing home care and wound centres was not affected. The use of telemedicine did not

significantly increase among our patient sample. There was a strong impact of the pandemic on patients' QoL. A significant number of participants feared SARS-CoV-2 infection or a severe course of COVID-19 due to HS or HS treatment.

Indeed, HS patients often have risk factors, that are associated with a severe course of COVID-19, such as diabetes, obesity<sup>9</sup> and cigarette smoking.<sup>8,11,12</sup> In addition, biologic treatment with adalimumab may expose HS patients to an additional risk for severe infection. However, the role of

biologic treatment during infection with COVID-19 remains controversial.<sup>16,17</sup> Given the uncertainty and fear of HS patients concerning risks of infection with COVID-19 under HS treatment, close patient follow-up and counselling are crucial. Telemedicine may be a useful and practicable option, in order to minimise the risk of SARS-CoV-2 infection of vulnerable HS patients, maintain physician contact to HS patients, and thus, maintain optimal management of HS patients.

However, our data shows that telecommunication in management of HS remains uncommon in our setting, in contrast to a growing interest in North America.<sup>18,19</sup> Most of all, this may be due to the lack of established telemedicine systems or even technical resources and know-how.

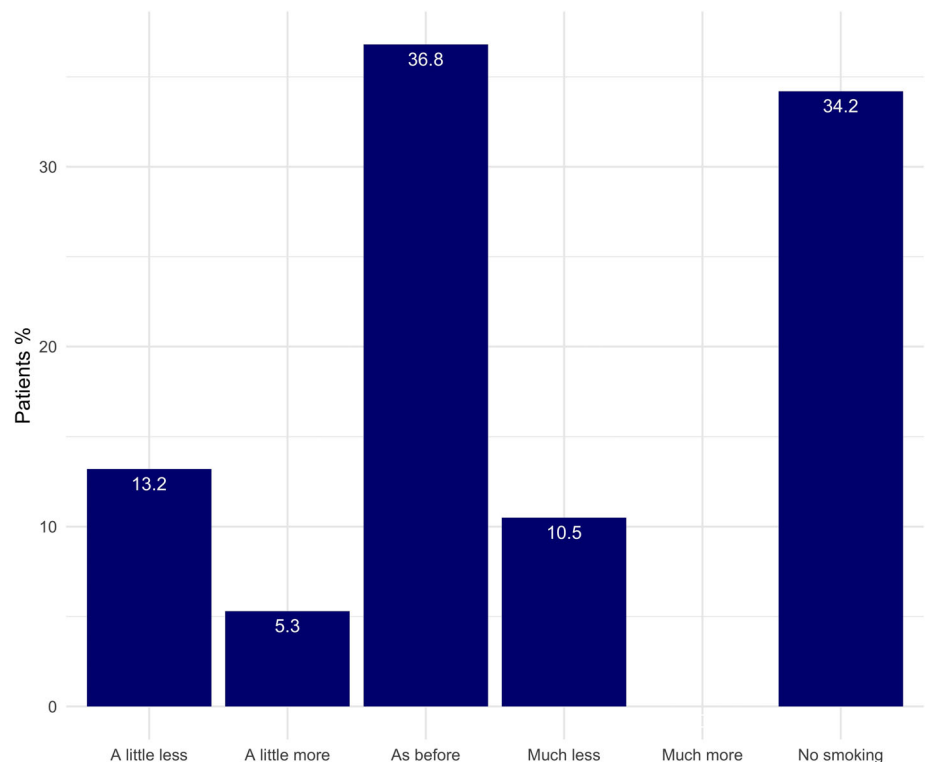
The QoL of our patients was lower compared to HS patients of studies prior to the pandemic.<sup>20</sup> On the one hand, this may be due to lockdown-related restrictions in daily life that also affect other parts of society. However, based on our data, the QoL in HS patients may additionally be impacted by the particular fear of infection with SARS-CoV-2, the limited access to primary care, the increased need to perform wound care without professional help and cancellation of hospitalisation, allegedly leading to worsening of HS lesions. Thus, remote patient counselling could be useful in order to counteract the decrease in the QoL of HS patients during the pandemic.

A limitation of this survey is the sample size of 50 patients recruited from a single institution. In addition, not all participants answered every question. However, the return rate of 50% was remarkably high. The high

**TABLE 2** Effect of the COVID-19 pandemic on DLQI of study participants (mean 10.06 [95% confidence interval: 8.02, 12.10; SD = 7.17])

	n = replies	%
All study participants	50	100
No effect at all on patient's QoL (DLQI 0-1)	7	14
Small effect on patient's QoL (DLQI 2-5)	14	28
Moderate effect on patient's QoL (DLQI 6-10)	9	18
Very large effect on patient's QoL (DLQI 11-20)	14	28
Extremely large effect on patient's QoL (DLQI 21-30)	6	12

Note: Dermatology Life Quality Index (DLQI) in study population. DLQI values range from 0 to 30 (mean 10.06 [95% confidence interval: 8.02, 12.10; SD = 7.17]).



**FIGURE 3** Smoking behaviour in HS patients prior and during the COVID-19 pandemic. The exact amount of smoked cigarettes has not been quantified

participation rate may further reflect the significant disease burden or impact of COVID-19 that our data shows.

## 5 | CONCLUSION

This survey provides evidence that, so far, the COVID-19 pandemic in our medical facility had a moderate to very large impact on patients with HS.

Despite its clear advantages, especially with respect to the pandemic, telemedicine still plays a negligible role in the management of HS patients. The final impact of the COVID-19 pandemic on HS patients depends on the course of the pandemic and remains subject of future research.

## ACKNOWLEDGEMENTS

The authors received no financial support for the research, authorship and/or publication of this article.

## CONFLICT OF INTEREST

The authors declare no conflicts of interest.

## ETHICS STATEMENT

This study has been approved by the local ethics committee (ethics committee University Hospital, LMU Munich, Germany, Ref.-No. 20-390 KB).

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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**How to cite this article:** Fiocco Z, Schlager JG, Kendziora B, et al. Impact of the COVID-19 pandemic on patients with hidradenitis suppurativa. *Int Wound J.* 2022;19(7):1686-1692. doi:10.1111/iwj.13772