

Article type: Original Article

Title: Enhanced impact of psoriasis severity on treatment demands of patients during the COVID–19 pandemic: A cross–sectional study based on a national psoriasis registry in China

Authors: Z. Yang, MD^{1†}; Y. Jin, PhD^{2†}; M. Wang, MD¹; R. Li, MD¹; W. Li, PhD^{2*}; H. Li, MD^{1,3*}

¹*Department of Dermatology and Venerology, Peking University First Hospital, Beijing 100034, China; Beijing Key Laboratory of Molecular Diagnosis of Dermatoses, Peking University First Hospital, Beijing 100034, China; National Clinical Research Center for Skin and Immune Diseases, Beijing 100034, China; and NMPA Key Laboratory for Quality Control and Evaluation of Cosmetics, Peking University First Hospital, Beijing 100034, China.*

²*State Key Laboratory of Holistic Integrative Management of Gastrointestinal Cancers, Beijing Key Laboratory of Carcinogenesis and Translational Research, Department of Cancer Epidemiology, Peking University Cancer Hospital & Institute, Beijing 100142, China*

³*Peking University – Yunnan Baiyao International Medical Research Center*

[†]These authors contributed equally.

Corresponding author (W. Li and H. Li contributed equally):

Wenqing Li, PhD, Prof.

No.52 Fucheng Road, Haidian District

Beijing, P. R. China. 100143

Tel: (86)18010276738

Email: wenqing_li@bjmu.edu.cn

Hang Li, MD., Prof.

No.1 Xi'anmen Street, Xicheng District

Beijing, P. R. China. 100034

Tel: (86)–10–83573075

Email: drlihang@126.com

ORCID: 0000–0002–7343–3865

Supplemental Material

Table S1. Data preprocessing standards for derived variables and variables with potential mistaken values3

Table S2. Comparison of baseline characteristics between full population and study population with complete data.....4

Table S3. Baseline characteristics stratified by treatment demands6

Table S4. Multivariable logistic regression models examining the impact of PASI on treatment demands stratified by COVID–19 lockdowns10

Table S5. Multivariable logistic regression models examining the impact of BSA on treatment demands stratified by COVID–19 lockdowns11

Table S6. Multivariable logistic regression models examining the impact of IGA on treatment demands stratified by COVID–19 lockdowns12

Table S1. Data preprocessing standards for derived variables and variables with potential mistaken values

Patient characteristics	Data preprocessing standards
Height	Was treated as a missing value if height<80cm or >200cm
Weight	Was treated as a missing value if weight <25kg or >200kg
Psoriasis duration	The year of enrollment minus the year of diagnosis
Family history	Was treated as a missing value if the patient was unsure about the family history
Psoriatic arthritis	Was treated as “yes” if the patient was diagnosed with arthropathic psoriasis or psoriatic arthritis
Body Surface Area	Was treated as a missing value if BSA<75% for patients diagnosed with erythrodermic psoriasis

Table S2. Comparison of baseline characteristics between full population and study population with complete data

Patient characteristics	Full population (n=29 412) ^a	Study population (n=22 425)	Missing number and proportion
Male, No. (%)	19 120 (65.1)	14 567 (65.0)	53 (0.2)
Age, median (IQR), y	41 (32–54)	40 (31–54)	241 (0.8)
BMI, median (IQR), kg/m ²	24.0 (21.6–26.6)	24.0 (21.7–26.7)	678 (2.3)
Unemployment ^b , No. (%)	2544 (11.5)	1994 (11.4)	1019 (3.5)
Married, No. (%)	22 004 (77.5)	17 204 (76.7)	1018 (3.5)
Bachelor's degree or higher, No. (%)	9277 (34.5)	7828 (34.9)	2487 (8.5)
Current smoker, No. (%)	7101 (25.0)	6023 (26.9)	1018 (3.5)
Enrolled during the COVID–19 lockdowns	4178 (14.3)	2706 (12.1)	159 (0.5)
Psoriasis duration, median (IQR), y	6 (2–14)	6 (2–14)	27 (0.1)
Family history, No. (%)	21 924 (16.5)	3816 (17.0)	3166 (10.8)
Psoriasis phenotype, No. (%)			
Plaque psoriasis	24 574 (83.6)	18 231 (81.3)	17 (0.1)
Erythrodermic psoriasis	376 (1.3)	242 (1.1)	
Pustular psoriasis	968 (3.3)	658 (2.9)	
Guttate psoriasis	3670 (12.5)	3016 (13.4)	
Psoriatic arthritis	2302 (7.8)	1590 (7.1)	
Lesions on special areas, No. (%)			
Nail involvement	6440 (23.1)	5365 (23.9)	1527 (5.2)
Scalp involvement	18 190 (64.0)	14 578 (65.0)	986 (3.4)
Palm or/and sole involvement	5705 (20.3)	4458 (19.9)	1288 (4.4)
Genital involvement	3702 (13.3)	3014 (13.4)	1544 (5.2)
Disease severity, median (IQR)			
PASI	7.2 (3.0–14.7)	7.2 (3.0–14.6)	507 (1.7)
BSA	10.0 (3.4–30.0)	10.0 (3.0–30.0)	494 (1.7)
IGA	3 (2–3)	3 (2–3)	500 (1.7)
DLQI	8 (3–13)	8 (3–12)	1 261 (4.3)
Comorbidities No. (%)	4101 (13.9)	3245 (14.5)	2630 (8.9)
Previous biological treatment ^c , No. (%)	2603 (8.9)	1982 (8.8)	23 (0.1)
Treatment demands			
Healing skin lesions rapidly	25 213 (88.8)	20 111 (89.7)	1021 (3.5)
Improving mental health	10 706 (37.7)	8531 (38.0)	
Reducing social discrimination	8854 (31.2)	7042 (31.4)	
Working and socializing normally	8120 (28.6)	6604 (29.4)	
Relieving painful/ burning feelings	6979 (24.6)	5476 (24.4)	
Relieving itchy feelings	10 668 (37.6)	8549 (38.1)	

Reducing side effects of treatment	8708 (30.7)	7162 (31.9)
Reducing relapses	1651 (5.8)	1063 (4.7)

Abbreviations: BMI, body mass index; PASI, Psoriasis Area and Severity Index; BSA, Body Surface Area; IGA, Investigator’s Global Assessment; DLQI, Dermatology Life Quality Index.

- ^a Totally 29,412 adults were enrolled in the registry by September 2021.
- ^b Unemployment rate was calculated in the working–age population, which excluded retired patients and students.
- ^c Biological treatment included Tumor Necrosis Factor- α Inhibitors and Interleukin Inhibitors.

Table S3. Baseline characteristics stratified by treatment demands

	Reducing social discrimination			Working and socializing normally			Relieving painful or burning feelings			Relieving itchy feelings			Reducing the side effects of treatment			Reducing relapses		
	Yes (n=70 42)	No (n=15 383)	P val ue	Yes (n=66 04)	No (n=15 821)	P val ue	Yes (n=54 76)	No (n=16 949)	P val ue	Yes (n=85 49)	No (n=13 876)	P val ue	Yes (n=71 62)	No (n=15 263)	P val ue	Yes (n=10 63)	No (n=21 362)	P val ue
Demographics																		
Male, n (%)	4664 (66.2)	9903 (64.4)	0.0 07	4438 (67.2)	10129 (64.0)	<0. 001	3631 (66.3)	10936 (64.5)	0.0 16	5506 (64.4)	9061 (65.3)	0.1 73	4557 (63.6)	10010 (65.6)	0.0 04	675 (63.5)	13892 (65.0)	0.3 07
Age,y,median(I QR)	40(31 –53)	40(31 –54)	0.1 21	38(30 –51)	41(31 –54)	<0. 001	43(32 –56)	39(31 –53)	<0. 001	41(32 –55)	39(31 –52)	<0. 001	40(31 –53)	40(31 –54)	0.9 35	39(30 –53)	40(31 –54)	0.1 42
BMI,kg/m²,medi an(IQR)	24.1(21.9– 26.7)	24.0(21.6– 26.8)	0.6 08	24.2(21.9– 27.0)	24.0(21.7– 26.7)	<0. 001	24.1(21.9– 26.7)	24.0(21.7– 26.7)	0.1 59	24.2(21.8– 27.0)	24.0(21.7– 26.6)	0.0 02	24.2(21.8– 27.0)	24.0(21.7– 26.6)	0.0 02	23.4(21.3– 26.0)	24.1(21.8– 26.8)	<0. 001
Unemployment ^a , n (%)	658 (11.7)	1336 (11.2)	0.3 32	668 (12.4)	1326 (11.0)	0.0 08	575 (13.8)	1419 (10.7)	<0. 001	873 (13.4)	1121 (10.2)	<0. 001	740 (13.0)	1254 (10.6)	<0. 001	85 (10.4)	1909 (11.5)	0.6 43
Married, n (%)	5486 (77.9)	11718 (76.2)	0.0 04	4915 (74.4)	12289 (77.7)	<0. 001	4419 (80.7)	12785 (75.4)	<0. 001	6666 (78.0)	10538 (75.9)	<0. 001	5560 (77.6)	11644 (76.3)	0.0 27	806 (75.8)	16398 (76.8)	0.4 79
Bachelor’s degree, n (%)	2246 (31.9)	5582 (36.3)	<0. 001	2460 (37.3)	5368 (33.9)	<0. 001	1546 (28.2)	6282 (37.1)	<0. 001	2794 (32.7)	5034 (36.3)	<0. 001	2457 (34.3)	5371 (35.2)	0.1 96	380 (35.8)	7448 (34.9)	0.5 56
Current smoker, n (%)	1685 (23.9)	4338 (28.2)	<0. 001	1854 (28.1)	4169 (26.4)	0.0 08	1447 (26.4)	4576 (27.0)	0.4 05	2351 (27.5)	3672 (26.5)	0.0 89	1955 (27.3)	4068 (26.7)	0.3 10	259 (24.4)	5764 (27.0)	0.0 60
COVID–19 lockdown, n (%)	889 (12.6)	1817 (11.8)	0.0 83	799 (12.1)	1907 (12.1)	0.9 25	647 (11.8)	2059 (12.1)	0.5 11	1051 (12.3)	1655 (11.9)	0.4 13	938 (13.1)	1768 (11.6)	0.0 01	344 (32.4)	2362 (11.1)	<0. 001
Duration,y, median(IQR)	8(2– 15)	6(1– 14)	<0. 001	8(2– 15)	6(1– 14)	<0. 001	7(2– 15)	6(1– 14)	<0. 001	6(2– 14)	6(1– 14)	0.9 83	7(2– 15)	6(1– 14)	<0. 001	6(2– 14)	6(2– 14)	0.8 73
Continued																		

	Reducing social discrimination			Working and socializing normally			Relieving painful or burning feelings			Relieving itchy feelings			Reducing the side effects of treatment			Reducing relapses		
	Yes	No	P	Yes	No	P	Yes	No	P	Yes	No	P	Yes	No	P	Yes	No	P
	(n=70	(n=15	val	(n=66	(n=15	val	(n=54	(n=16	val	(n=85	(n=13	val	(n=71	(n=15	val	(n=10	(n=21	val
	42)	383)	ue	04)	821)	ue	76)	949)	ue	49)	876)	ue	62)	263)	ue	63)	362)	ue
Family history, n (%)	1100 (15.6)	2716 (17.7)	<0.001	1201 (18.2)	2615 (16.5)	0.003	862 (15.7)	2954 (17.4)	0.004	1458 (17.1)	2358 (17.0)	0.906	1324 (18.5)	2492 (16.3)	<0.001	184 (17.3)	3632 (17.0)	0.795
Psoriasis phenotype ^b , n (%)																		
Plaque psoriasis	5934 (84.3)	12297 (79.9)	<0.001	5417 (82.0)	12814 (81.0)	0.071	4473 (81.7)	13758 (81.2)	0.339	7016 (82.1)	11215 (80.8)	0.020	5823 (81.3)	12408 (81.3)	0.986	929 (87.4)	17302 (81.0)	<0.001
Erythrodermic psoriasis	93 (1.32)	149 (0.97)	0.018	120 (1.8)	122 (0.77)	<0.001	116 (2.1)	126 (0.7)	<0.001	124 (1.5)	118 (0.9)	<0.001	113 (1.6)	129 (0.8)	<0.001	13 (1.2)	229 (1.1)	0.642
Pustular psoriasis	184 (2.6)	474 (3.1)	0.054	156 (2.4)	502 (3.2)	0.01	230 (4.2)	428 (2.5)	<0.001	250 (2.9)	408 (2.9)	0.945	189 (2.6)	469 (3.1)	0.073	25 (2.4)	633 (3.0)	0.249
Guttate psoriasis	735 (10.4)	2281 (14.8)	<0.001	809 (12.3)	2207 (13.9)	0.01	533 (9.7)	2483 (14.6)	<0.001	1063 (12.4)	1953 (14.1)	<0.001	934 (13.0)	2082 (13.6)	0.20	88 (8.3)	2928 (13.7)	<0.001
Arthropathic psoriasis	595 (8.5)	995 (6.5)	<0.001	498 (7.5)	1092 (6.9)	0.089	606 (11.1)	984 (5.8)	<0.001	631 (7.4)	959 (6.9)	0.183	536 (7.5)	1054 (6.9)	0.16	60 (5.6)	1530 (7.2)	0.060
Lesions on special areas, n (%)																		
Nail involvement	1701 (24.2)	3664 (23.8)	0.583	1943 (29.4)	3422 (21.6)	<0.001	1548 (28.3)	3817 (22.5)	<0.001	2280 (26.7)	3085 (22.2)	<0.001	2019 (28.2)	3346 (21.9)	<0.001	286 (26.9)	5079 (23.8)	0.020
Scalp involvement	4538 (64.4)	10040 (65.3)	0.229	4662 (70.6)	9916 (62.7)	<0.001	3693 (67.4)	10885 (64.2)	<0.001	5937 (69.5)	8641 (62.3)	<0.001	5011 (70.0)	9567 (62.7)	<0.001	694 (65.3)	13884 (65.0)	0.845
Palmoplantar involvement	1519 (21.6)	2939 (19.1)	<0.001	1482 (22.4)	2976 (18.8)	<0.001	1390 (25.4)	3068 (18.1)	<0.001	1906 (22.3)	2552 (18.4)	<0.001	1590 (22.2)	2868 (18.8)	<0.001	209 (19.7)	4249 (19.9)	0.855
Continued																		

	Reducing social discrimination			Working and socializing normally			Relieving painful or burning feelings			Relieving itchy feelings			Reducing the side effects of treatment			Reducing relapses		
	Yes	No	P	Yes	No	P	Yes	No	P	Yes	No	P	Yes	No	P	Yes	No	P
	(n=70	(n=15	val	(n=66	(n=15	val	(n=54	(n=16	val	(n=85	(n=13	val	(n=71	(n=15	val	(n=10	(n=21	val
	42)	383)	ue	04)	821)	ue	76)	949)	ue	49)	876)	ue	62)	263)	ue	63)	362)	ue
Lesions on special areas, n (%)																		
Genital involvement	1020	1994	0.0	1088	1926	<0.02	936	2078	<0.001	1403	1611	<0.001	1186	1828	<0.001	164	2850	0.052
Disease severity, median (IQR)																		
PASI	9.6	6.0	<0.001	9.0	6.4	<0.001	9.2	6.4	<0.001	7.9	6.6	<0.001	8.1	6.5	<0.001	5.8	7.2	<0.001
	(4.2–17.4)	(2.7–13.2)		(3.7–17.1)	(2.8–13.5)		(3.9–18.0)	(2.8–13.6)		(3.3–16.1)	(2.8–13.8)		(3.6–16.1)	(2.8–13.9)		(2.6–12.0)	(3.0–14.7)	
BSA, %	15.0	8.0	<0.001	13.0	10.0	<0.001	15.0	10.0	<0.001	10.0	10.0	<0.001	10.0	10.0	<0.001	9.0	10.0	0.086
	(5.0–31.0)	(3.0–25.0)		(5.0–34.0)	(3.0–25.0)		(5.0–35.0)	(3.0–25.0)		(3.3–30.0)	(3.0–27.0)		(4.0–30.0)	(3.0–27.0)		(3.0–30.0)	(3.0–30.0)	
IGA	3 (2–3)	2 (2–3)	<0.001	3 (2–3)	3 (2–3)	<0.001	3 (2–3)	3 (2–3)	<0.001	3 (2–3)	3 (2–3)	<0.001	3 (2–3)	3 (2–3)	<0.001	3 (2–3)	3 (2–3)	<0.001
DLQI, median (IQR)	10(6–16)	6(2–10)	<0.001	10(6–17)	6(2–11)	<0.001	10(6–16)	7(2–11)	<0.001	9(4–14)	7(2–12)	<0.001	9(4–15)	7(2–11)	<0.001	8(3–12)	8(3–12)	0.194
Comorbidity ^c , n (%)	906	2339	<0.001	990	2255	0.003	872	2373	<0.001	1404	1841	<0.001	1158	2087	<0.001	152	3093	0.890
	(12.9)	(15.2)		(15.0)	(14.3)		(15.9)	(14.0)		(16.4)	(13.3)		(16.2)	(13.7)		(14.3)	(14.5)	
Previous use of biologics ^d	631	1351	0.663	608	1374	0.209	414	1568	<0.001	557	1425	<0.001	597	1385	0.069	114	1868	0.026
	(9.0)	(8.8)		(9.2)	(8.7)		(7.6)	(9.3)		(6.5)	(10.3)		(8.3)	(9.1)		(10.7)	(8.7)	

Abbreviations: BMI, body mass index; BSA, Body Surface Area; DLQI, Dermatology Life Quality Index; IGA, Investigator's Global Assessment; IQR, interquartile range; PASI, Psoriasis Area and Severity Index.

^aThe unemployment rate was calculated in the working-age population, which excluded retired patients and students.

^bPhenotypes were not mutually exclusive, thus the total percentage was higher than 100%.

^cComorbidity presented the existence of any disease conditions including cardiovascular diseases, respiratory diseases, kidney diseases, rheumatic diseases, digestive diseases, tumors, endocrine diseases, etc.

^dBiologics included Tumor Necrosis Factor - α Inhibitors and Interleukin Inhibitors.

Table S4. Multivariable logistic regression models examining the impact of PASI on treatment demands stratified by COVID–19 lockdowns

Odds ratios (95% CI)	Without COVID–19 lockdowns								With COVID–19 lockdowns								Heterogeneity test	
	Mild		Moderate		Severe		Trend Test ^a		Mild		Moderate		Severe		Trend Test		Q	P
	PASI<3		PASI 3 to <10		PASI≥10				PASI<3		PASI 3 to <10		PASI≥10				(df)	value
Healing skin lesions rapidly	1.0		1.17 (1.03–1.32)*		1.45 (1.27–1.65)***		1.02 (1.01–1.02)***		1.0		1.50 (1.12–2.02)**		2.19 (1.57–3.05)***		1.04 (1.02–1.06)***		3.42 (1)	0.064
Improving mental health	1.0		1.47 (1.35–1.59)***		2.21 (2.03–2.40)***		1.03 (1.02–1.03)***		1.0		1.75 (1.40–2.18)***		2.82 (2.24–3.55)***		1.04 (1.03–1.05)***		3.44 (1)	0.064
Reducing social discrimination	1.0		1.65 (1.52–1.81)***		2.51 (2.29–2.74)***		1.03 (1.02–1.03)***		1.0		2.46 (1.92–3.15)***		4.35 (3.37–5.62)***		1.05 (1.04–1.06)***		12.82 (1)	<0.001
Working and socializing normally	1.0		1.27 (1.17–1.39)***		1.63 (1.49–1.78)***		1.02 (1.01–1.02)***		1.0		1.70 (1.33–2.17)***		2.81 (2.19–3.60)***		1.03 (1.02–1.04)***		9.09 (1)	0.003
Relieving painful or burning feelings	1.0		1.22 (1.11–1.34)***		1.59 (1.45–1.75)***		1.02 (1.02–1.02)***		1.0		1.70 (1.28–2.25)***		2.66 (2.01–3.53)***		1.04 (1.03–1.05)***		9.74 (1)	0.002
Relieving itchy feelings	1.0		1.07 (0.99–1.16)		1.11 (1.03–1.21)*		1.01 (1.004–1.01)***		1.0		1.32 (1.06–1.63)*		1.69 (1.35–2.11)***		1.02 (1.01–1.03)***		8.27 (1)	0.004
Reducing the side effects of treatment	1.0		1.25 (1.15–1.36)***		1.32 (1.21–1.44)***		1.01 (1.01–1.01)***		1.0		1.66 (1.33–2.07)***		1.90 (1.51–2.40)***		1.02 (1.01–1.03)***		2.44 (1)	0.118
Reducing relapses	1.0		0.81 (0.67–0.97)*		0.61 (0.49–0.75)***		0.98 (0.98–0.99)***		1.0		0.89 (0.66–1.20)		0.81 (0.58–1.12)		1.01 (0.997–1.02)		10.88 (1)	0.001

Abbreviations: PASI, Psoriasis Area and Severity Index. All the models adjusted for sex, age, BMI, marriage, education, smoke, disease course, family history, disease phenotype, whether special areas were affected, comorbidities, and previous treatment, stratified by whether was enrolled during the COVID pandemic.

^aPASI was treated as a continuous variable in the trend test.

*Significant at *P*<0.050; **Significant at *P*<0.010; ***Significant at *P*<.001.

Table S5. Multivariable logistic regression models examining the impact of BSA on treatment demands stratified by COVID–19 lockdowns

Odds ratios (95% CI)	Without COVID–19 lockdowns					With COVID–19 lockdowns					Heterogeneity test	
	Mild	Moderate	Severe	Trend Test ^a		Mild	Moderate	Severe	Trend Test		Q (df)	P
	BSA<3%	BSA 3 to <10%	BSA≥10%			BSA<3%	BSA 3 to <10%	BSA≥10%				value
Healing skin lesions rapidly	1.0	1.10 (0.96–1.26)	1.33 (1.17–1.50)***	1.01 (1.01–1.01)***		1.0	1.25 (0.88–1.76)	1.38 (0.999–1.896)	1.01 (1.001–1.01)*		0.19 (1)	0.663
Improving mental health	1.0	1.46 (1.33–1.60)***	2.01 (1.85–2.19)***	1.01 (1.01–1.01)***		1.0	1.72 (1.33–2.23)***	3.27 (2.57–4.15)***	1.02 (1.01–1.02)***		22.01 (1)	<0.001
Reducing social discrimination	1.0	1.64 (1.48–1.81)***	2.32 (2.12–2.54)***	1.01 (1.01–1.01)***		1.0	1.87 (1.40–2.51)***	4.56 (3.48–5.97)***	1.02 (1.02–1.03)***		37.08 (1)	<0.001
Working and socializing normally	1.0	1.32 (1.19–1.45)***	1.64 (1.50–1.79)***	1.01 (1.01–1.01)***		1.0	1.76 (1.32–2.35)***	3.20 (2.45–4.18)***	1.02 (1.01–1.02)***		13.25 (1)	<0.001
Relieving painful or burning feelings	1.0	1.28 (1.15–1.42)***	1.70 (1.54–1.87)***	1.01 (1.01–1.01)***		1.0	1.78 (1.29–2.45)***	2.62 (1.94–3.54)***	1.01 (1.01–1.02)***		3.84 (1)	0.050
Relieving itchy feelings	1.0	0.98 (0.89–1.07)	1.07 (0.99–1.16)	1.001 (0.999–1.002)		1.0	1.10 (0.86–1.39)	1.41 (1.13–1.76)**	1.01 (1.004–1.01)***		11.34 (1)	0.001
Reducing the side effects of treatment	1.0	1.15 (1.05–1.26)**	1.26 (1.16–1.37)***	1.003 (1.002–1.005)***		1.0	1.50 (1.16–1.93)**	1.99 (1.57–2.52)***	1.01 (1.003–1.01)***		3.66 (1)	0.056
Reducing relapses	1.0	1.06 (0.85–1.32)	0.97 (0.79–1.18)	0.997 (0.99–1.001)		1.0	1.12 (0.81–1.55)	0.74 (0.54–1.02)	0.996 (0.99–1.003)		0.07 (1)	0.785

Abbreviations: BSA, Body Surface Area. All the models adjusted for sex, age, BMI, marriage, education, smoke, disease course, family history, disease phenotype, whether special areas were affected, comorbidities, and previous treatment, stratified by whether was enrolled during the COVID pandemic.

^aBSA was treated as a continuous variable in the trend test.

*Significant at *P*<0.050; **Significant at *P*<0.010; ***Significant at *P*<.001.

Table S6. Multivariable logistic regression models examining the impact of IGA on treatment demands stratified by COVID–19 lockdowns

Odds ratios (95% CI)	Without COVID–19 lockdowns										With COVID–19 lockdowns					Heterogeneity test	
	Almost clear IGA=0/1	Mild IGA=2	Moderate IGA=3		Severe IGA=4		Trend Test ^a		Almost clear IGA=0/1	Mild IGA=2	Moderate IGA=3		Severe IGA=4		Trend Test	Q (df)	P value
Healing skin lesions rapidly	1.0	1.30 (1.12–1.52)**	1.68 (1.44–1.96)***		1.64 (1.35–1.99)***		1.21 (1.14–1.27)***		1.0	1.17 (0.82–1.67)	2.49 (1.71–3.64)***		2.70 (1.63–4.49)***		1.49 (1.30–1.71)***	7.75 (1)	0.005
Improving mental health	1.0	1.22 (1.09–1.36)***	1.70 (1.52–1.90)***		2.21 (1.94–2.51)***		1.30 (1.26–1.35)***		1.0	1.28 (0.96–1.70)	2.07 (1.57–2.74)***		1.91 (1.36–2.68)***		1.30 (1.18–1.43)***	<0.01 (1)	0.971
Reducing social discrimination	1.0	1.43 (1.27–1.61)***	1.85 (1.64–2.08)***		2.55 (2.22–2.92)***		1.32 (1.28–1.37)***		1.0	1.48 (1.10–2.01)*	2.04 (1.52–2.75)***		2.08 (1.46–2.97)***		1.29 (1.17–1.43)***	0.21 (1)	0.646
Working and socializing normally	1.0	1.12 (0.99–1.26)	1.43 (1.27–1.60)***		1.65 (1.45–1.89)***		1.19 (1.14–1.23)***		1.0	1.06 (0.78–1.44)	1.55 (1.16–2.09)**		1.69 (1.19–2.41)**		1.24 (1.12–1.37)***	0.54 (1)	0.461
Relieving painful or burning feelings	1.0	1.21 (1.06–1.38)**	1.54 (1.36–1.76)***		1.88 (1.62–2.18)***		1.23 (1.18–1.28)***		1.0	1.00 (0.69–1.44)	1.79 (1.27–2.53)**		1.88 (1.26–2.81)**		1.32 (1.18–1.48)***	1.29 (1)	0.256
Relieving itchy feelings	1.0	1.21 (1.08–1.35)**	1.45 (1.30–1.62)***		1.61 (1.41–1.83)***		1.17 (1.13–1.21)***		1.0	1.04 (0.78–1.37)	1.53 (1.16–2.01)**		1.16 (0.83–1.63)		1.13 (1.03–1.24)*	0.38 (1)	0.539
Reducing the side effects of treatment	1.0	1.09 (0.97–1.22)	1.28 (1.14–1.43)***		1.25 (1.10–1.43)**		1.09 (1.05–1.13)***		1.0	1.08 (0.82–1.44)	1.30 (0.98–1.71)		0.96 (0.69–1.35)		1.02 (0.93–1.13)	1.37 (1)	0.241
Reducing relapses	1.0	0.63 (0.50–0.79)***	0.53 (0.42–0.67)***		0.52 (0.39–0.70)***		0.79 (0.73–0.87)***		1.0	0.83 (0.55–1.27)	1.29 (0.87–1.92)		0.48 (0.27–0.85)*		0.98 (0.85–1.13)	5.86 (1)	0.016

Abbreviations: IGA, Investigator’s Global Assessment. All the models adjusted for sex, age, BMI, marriage, education, smoke, disease course, family history, disease phenotype, whether special areas were affected, comorbidities, and previous treatment, stratified by whether was enrolled during the COVID pandemic.

^aIGA was treated as a continuous variable in the trend test.

*Significant at *P*<0.050; **Significant at *P*<0.010; ***Significant at *P*<.001