Determinants of patient and physician treatment satisfaction in moderate-to-severe psoriasis: a multinational survey of psoriasis patients

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Abstract

There is a lack of validated information of both physician and patient-reported treatment satisfaction, and association with outcomes in psoriasis. Data from the 2015 Adelphi Psoriasis Disease Specific Programme were used to compare self-reported satisfaction with biologic and non-biologic therapy for psoriasis in physicians and their consulting patients in the United States (USA) and five European countries (EU5). Disease severity and health-related quality of life (HRQoL) were assessed using Body Surface Area (BSA) affected by psoriasis and the Dermatology Life Quality Index (DLQI), respectively. Patients satisfied with biologic therapy reported better HRQoL than unsatisfied patients, whereas a greater proportion of unsatisfied patients on biologic therapy had moderate-to-severe psoriasis (USA: 95.1% versus 52.4%, EU5; 86.4% versus 43.1%, P<0.0001). Multivariate logistic regression indicated that having a BSA affected by psoriasis of >10% was associated with lower likelihoods of physician and patient treatment satisfaction versus <3% (P<0.0001). A one-unit increase in the DLQI score lowered the likelihood of a patient being satisfied by approximately 20% (P<0.0001). Patients were ~60% more likely to be satisfied on biologic therapy than non-biologic therapy (P=0.0012). Physician and patient-reported treatment satisfaction was associated with greater HRQoL and lesser disease severity.

Keywords: biologic therapy, disease severity, non-biologic, psoriasis, quality of life, treatment satisfaction

Introduction

Psoriasis is a chronic inflammatory disease affecting the skin and nails, typically characterized by erythematous, scaly plaques. Although psoriasis can be extremely painful, patients also have a negative perception of their appearance, which can further impact on their health-related quality of life (HRQoL) and psychosocial well-being [1-4].Conventional clinical measures, such as Body Surface Area (BSA) affected by the disease, may not fully inform about the complex effects of psoriasis on patients. Patient-reported outcomes may help inform the broader complex effects of psoriasis on HRQoL [5].

Perceived satisfaction depends on the context in which care takes place, including the nature of treatment, its setting, and the expectation and preferences of patients prior to treatment [6,7]. Furthermore, treatment satisfaction has been shown to predict adherence to therapy, which may affect treatment effectiveness in clinical practice [5].

Owing to its complex nature, a consistent definition of treatment satisfaction is lacking in the literature, resulting in variation of reporting outcomes of physician or concurrent patient/physician satisfaction [8-10]. The aim of the present study was to examine treatment satisfaction with biologic and non-biologic therapy in psoriasis patients and their physicians by exploring the association between treatment satisfaction and disease severity.

Methods

Study design

Data were drawn from the Adelphi Real World Psoriasis Disease Specific Programme (DSP™), a cross-sectional real-world survey of psoriasis patients and their physicians in the USA and EU5 (the UK, Germany, France, Italy, and Spain) conducted between January and March 2015. Patients included in the DSP™ are at various points of their disease and have been receiving treatments for various durations. A complete description of the survey methodology has previously been published and validated [12-14]. The DSP™ was designed and conducted with consideration of the Standards for Reporting Qualitative Research (SRQR), [11]. All data were aggregated and de-identified before receipt so that patients and physicians could not be directly identified. Data collection was undertaken in line with European Pharmaceutical Marketing Research Association guidelines [15] and as such did not require ethics committee approval. The survey was performed in full accordance with relevant legislation, including the U.S. Health Insurance Portability and Accountability Act 1996 [16] and Health Information Technology for Economic and Clinical Health Act legislation [17]. Using a check box, patients provided informed consent for use of their anonymized and aggregated data for research purposes and publication in scientific journals.

Participating dermatologists provided data for ten consecutive consulting patients (≥18 years of age) with a confirmed diagnosis of psoriasis and meeting at least one of the following criteria: currently receiving or ever having received an oral retinoid, immunosuppressant, or biologic therapy; ever classified by their physician as having moderate/severe psoriasis; ever having ≥10% of BSA affected by psoriasis. A detailed record form was completed by each physician for each of their patients included in the study, capturing patient demographics, socioeconomic status, BSA%, and treatment satisfaction. Mild, moderate, and severe psoriasis were defined as BSA affected by psoriasis from 0% to 2%, 3% to 10%, and >10%, respectively [18]. Physician-reported treatment satisfaction was defined as "satisfaction with the current control of the patients PsO." with the physician responding "satisfied with control." "not satisfied, but believe this is the best control that can be realistically achieved for this patient," and "not satisfied and I believe better control can be achieved for this patient."

Patients recruited to the study were then invited to complete a patient-reported questionnaire, capturing information on HRQoL and treatment satisfaction. Patient-reported treatment satisfaction was defined as both "satisfaction with the current control of their disease" and "satisfaction with the control your current PsO treatment provides," with the patient responding "satisfied," "not satisfied, but I believe this is the best control that can be expected for my condition," and "not satisfied and I believe better control can be achieved." Patient HRQoL was determined using the Dermatology Life Quality Index (DLQI) which consists of ten questions across six domains. The overall response range for the DLQI is 0 to 30, with lower scores representing better HRQoL [19,20]. The reliability, construct validity and sensitivity to change of the DLQI have been demonstrated in psoriasis patients [20].

Patients who received conventional systemic/topical therapy, phototherapy or oral therapy, including apremilast, were grouped into the 'non-biologic' therapy category, whereas patients who received adalimumab, etanercept, infliximab, ustekinumab, or golimumab were grouped into the 'biologic' therapy category. There were 12 patients who received no therapy for psoriasis in this survey and consequently were excluded from therapy-stratified analyses.

Statistical analysis

Descriptive analyses were performed. Means and 95% Confidence Intervals (CI) were calculated for continuous variables and percentages were calculated for categorical variables. A chi-squared test was conducted to compare patient and physician satisfaction with biologic and non-biologic therapy, with $P<0.05$ indicating a significant difference in the distribution of patient/physician satisfaction between biologic and non-biologic users.

A t-test was used when comparing total DLQI scores and individual components of the DLQI score among satisfied and unsatisfied patients on biologic therapy. When comparing the proportion of satisfied and unsatisfied patients within treatment groups stratified by the severity of disease, a chi-squared test was used, with P<0.05 indicating a significant association between BSA affected by psoriasis and patient satisfaction.

Multivariate logistic regression was used to explore the association between disease severity, HRQoL, psoriasis treatment and physician/ patient satisfaction. Covariates included in the models were age, gender, education level, BSA, geographic region, use of biologic therapy, and DLQI score. Odds ratios (OR), 95% CIs and P values were reported from the model.

Results

Patients' and physicians' characteristics

In total, 1,651 psoriasis patients (23.9% in the USA and 76.1% in the EU5) and 282 treating physicians (24.8% in the USA and 75.2% in the EU5) completed paired responses related to their perception of treatment satisfaction. Table one includes pooled data across all countries and country-specific data.

Globally, patients' mean age was 44.6 years, 44.6% of patients were women and the majority were white/Caucasian (91.8%). Charlson comorbidity index scores ranged from 0.53 in the U.K. to 1.18 in Spain, with higher values indicating higher co-morbidity; the mean value in pooled data across countries was 0.86.

When considering pooled data from all countries, the mean DLQI score was 5.2 and the median baseline BSA affected by psoriasis was 18%. Overall, 35.5% of patients had mild disease, 38.6% of patients had moderate disease, and 25.9% of patients had severe disease; differences in baseline disease severity were observed between countries (P<0.05). There were also differences between types of therapy used across countries (P<0.05), (**Table 1**). A higher proportion of patients were treated with biologics in the USA and Italy than in Germany and the UK, whereas conventional systemic therapies (including apremilast) was used more in the UK than in Germany. Topical therapy or phototherapy was rarely used in Spain, Italy, and the UK, whereas these modes of treatment were used in almost 40% of patients in Germany. When considering pooled data across all countries, the use of biologics and conventional systemic therapies (including apremilast) was very similar (42.9% and 41.2% of patients, respectively).

In total, 45.7% of participating physicians were female and the median time in practice was 14 years. Among participating physicians, 26.6% worked only in hospital practice, 38.3% of physicians worked only in office practice, and 35.1% of physicians worked in hospital, office, or another practice setting.

Patient and physician treatment satisfaction

When considering pooled data from all countries, higher percentages of patients and physicians were satisfied with biologic therapy than non-biologic therapy (P<0.0001). This finding was also observed at an individual country level (**Table 2**). In Germany and the USA, patient satisfaction was higher with biologic therapy than non-biologic therapy (P=0.001 and P=0.007, respectively). In France, Italy and the USA, physician satisfaction was higher with biologic therapy than non-biologic therapy (P=0.004, P=0.002 and P<0.0001, respectively), (**Table 3**).

Disease severity and patient treatment satisfaction

A greater proportion of unsatisfied patients had a BSA affected by psoriasis reflecting moderate-to-severe disease (BSA ≥3%) when compared with satisfied patients. A higher percentage of patients who had moderate-to-severe psoriasis were unsatisfied with therapy. Among USA patients who were unsatisfied with treatment while receiving non-biologic therapy, 97.8% had moderate-to-severe psoriasis, whereas 67.8% of patients who were satisfied with treatment had moderate-to-severe psoriasis. Among USA patients who were unsatisfied with treatment while on biologic therapy, 95.1% had moderate-to-severe psoriasis compared to 52.4% of patients who were satisfied with treatment. Similarly, among EU5 patients who were unsatisfied with

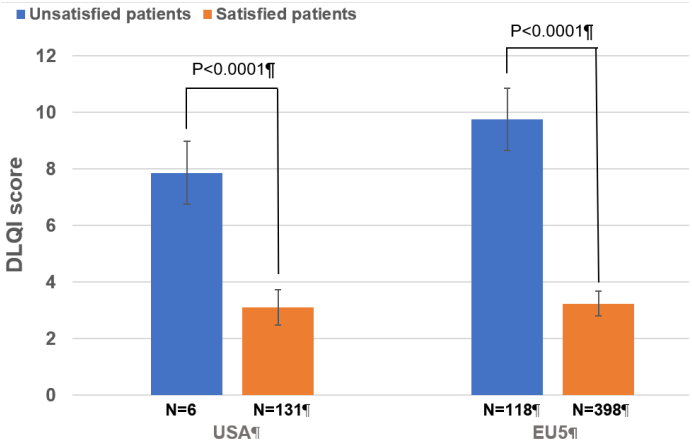

Figure 1. *DLQI score in satisfied and unsatisfied patients receiving biologic therapy. DLQI data are presented for the USA and are pooled across all EU5 countries. Data are presented for satisfied and unsatisfied patients receiving biologic therapy. Error bars represent 95% confidence interval. P values were calculated from t-test comparing satisfied patients with unsatisfied patients within each country.*

treatment while on non-biologic therapy, 89.7% had moderate-to-severe psoriasis versus 57.5% of patients who were satisfied with treatment. Of EU5 patients who were unsatisfied with treatment while receiving biologic therapy, 86.4% had moderate-to-severe psoriasis, whereas 43.1% of patients who were satisfied with treatment had moderate-to-severe psoriasis. These findings show that patients who remain moderate-to-severe are largely unsatisfied with treatment regardless of therapy.

Quality of life and patient satisfaction

Furthermore, patients satisfied with biologic therapy had a lower DLQI score, indicating better HRQoL, compared to patients unsatisfied with biologic therapy. This finding was observed across all individual countries. The mean DLQI score in unsatisfied patients receiving treatment in EU5 countries was higher than in satisfied patients (9.75, 95% CI: 8.65 to 10.85 versus 3.24, 95% CI: 2.81 to 3.67, P<0.0001), (**Figure 1**). Similarly, in the USA the mean DLQI score was higher in unsatisfied patients (7.87, 95% CI: 6.76 to 8.98) than in satisfied patients (3.11, 95% CI: 2.47 to 3.74, P<0.0001).

The score for each individual component of the DLQI measure was lower in patients who were satisfied compared with patients who were unsatisfied with their treatment (**Figure 2**). In all cases, the differences were statistically significant (P<0.0001), except for the individual questions of 'when psoriasis made it difficult to do any sport' in the USA, and 'when psoriasis prevented the patient from working or studying' in both the EU5 and the USA.

Relationship between patient characteristics and patient and physician satisfaction

When considering pooled data across all countries, a number of factors were associated with patient or physician satisfaction with treatment. Having >10% BSA affected by psoriasis while receiving treatment was associated with a lower likelihood of physician (0.034, 95% CI: 0.02 to 0.057, P<0.0001) and patient satisfaction (0.143, 95% CI: 0.095 to 0.216, P<0.0001) when compared to patients having <3% BSA affected. Presence of moderate-to-severe disease predicted satisfaction, regardless of treatment. A one-unit increase in the DLQI score increased the likelihood of a patient and physician being unsatisfied by approximately 20% and 10%, respectively (P<0.0001).

Other factors such as patients' age, gender, or level of education did not contribute to the likelihood of patient and physician satisfaction with therapy (**Figure 3**).

Discussion

Patient satisfaction is a crucial element of patient-centered care. It is a measure of healthcare system performance and has implications for medical decision-making [5,21]. Our study reported on patient and physician satisfaction with treatment for psoriasis across the USA and Europe. Given the importance of biologic therapy in the treatment of psoriasis, our study focused on the relationship between two key variables, disease severity and patients' HRQoL, and physician/patient satisfaction with biologic and non-biologic therapies.

In this study, severity of psoriasis was associated with patient satisfaction with their treatment. A higher proportion of unsatisfied patients, regardless of treatment type, had moderate-to-severe psoriasis (BSA affected by psoriasis >3%) compared with patients satisfied with therapy and patients with

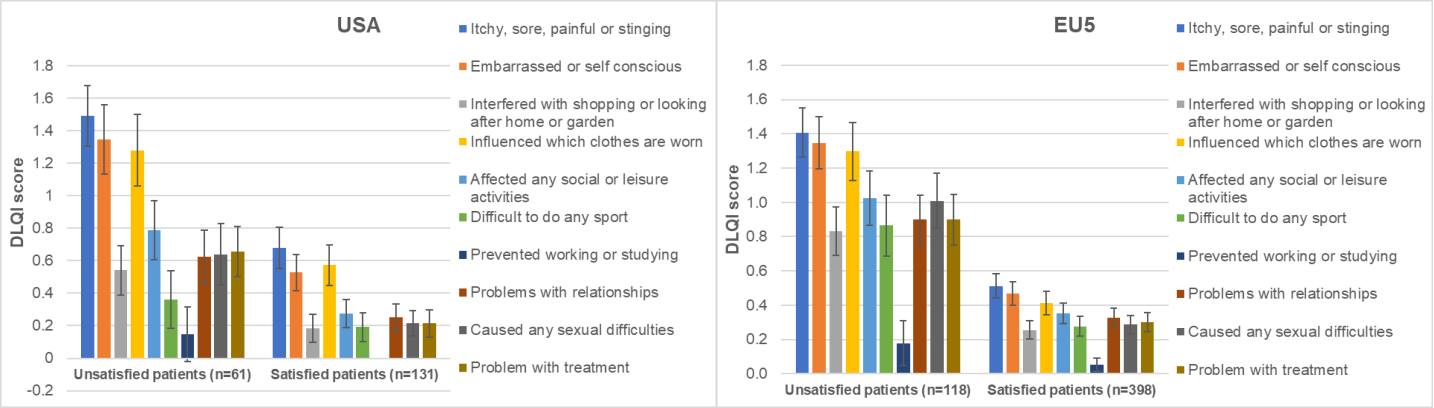

Figure 2. *Component DLQI score in satisfied and unsatisfied patients receiving biologic therapy. DLQI data are presented for the USA and are pooled across all EU5 countries. Data are presented for satisfied and unsatisfied patients receiving biologic therapy. Error bars represent 95% confidence interval. P values were calculated from t-test comparing satisfied patients with unsatisfied patients within each country. In all cases the differences were statistically significant (P<0.0001), except for 'when psoriasis made it difficult to do any sport' in the USA and 'when psoriasis prevented the patient from working or studying' in both the EU5 and the USA.*

mild disease were more likely to be satisfied with their treatment, in line with previous studies. [5,22,23].

A regression analysis demonstrated both patient and physician satisfaction were likely to be lower among patients with moderate rather than mild disease while receiving treatment and among those who reported poorer HRQoL. In addition, the levels of both patient and physician satisfaction were likely to be higher in patients receiving biologic therapy compared to non-biologic therapy.

Previous research has indicated that there is a high level of dissatisfaction with treatment overall among psoriasis patients, reflecting many confounding factors [8,24]. Studies have highlighted an association between the type of treatment patients received and the reported level of patient dissatisfaction. Low levels of treatment satisfaction were associated with topical therapies, whereas higher levels of satisfaction were associated with biologic agents [9,25-28]. Our results demonstrated that regardless of therapy type, there remains a substantial proportion of psoriasis patients and their physicians who were unsatisfied with therapy, and demonstrate that lower BSA affected by psoriasis and DLQI responses reflecting HRQoL are important determinants of patient treatment satisfaction.

Alignment between physicians and their patients is emerging as an important concept to ensure the successful implementation of treatment plans, as well as optimal outcomes [29,30,31].

The DSP™ survey was designed to provide a holistic, impartial observation of psoriasis patients and their physicians. Importantly, it permitted concurrent assessment of both patient and physician satisfaction with treatment options across multiple countries. However, certain limitations of our study should be acknowledged. The quality of data depended, to a large extent, on the accuracy of reporting of information by physicians and patients, which may have been subject to recall bias. Although physicians were requested to collect data on a series of consecutive patients to reduce selection bias, whether this approach yielded a truly representative patient population is unclear. Therefore, the data collected do not represent a truly random sample of the overall population of psoriasis patients. Selection of participating physicians may have also introduced bias, as the set of physicians surveyed represented a pragmatic sample and may not be completely representative of the overall group of physicians treating psoriasis. Outcomes analyzed in this study contained populations of patients with varying levels of disease severity and the threshold distinguishing mild versus moderate disease (2% versus 3% BSA) may be marginal. Patients included in the DSP™ are at various points in their disease history and will have been receiving treatments for various durations.

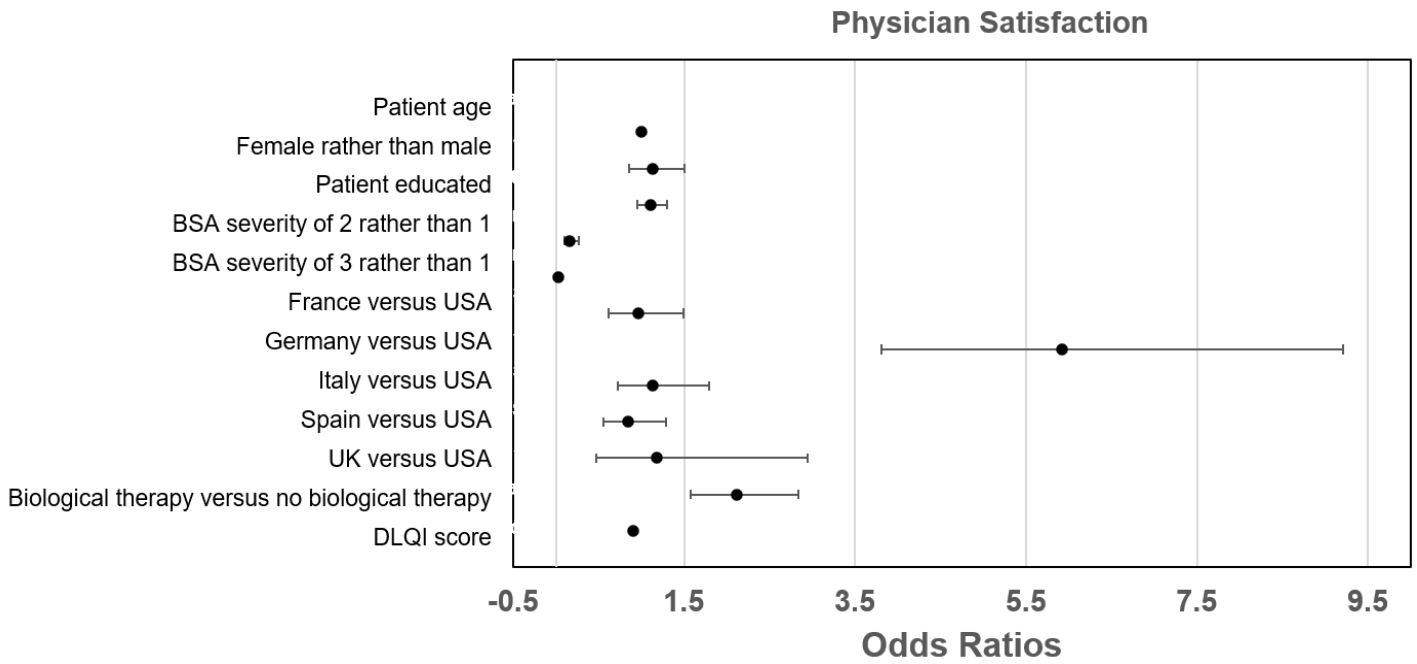

Figure 3. *Predicted multivariate relationship between patients' characteristics and patient and physician satisfaction. Forest plot depicts the odds ratios (OR) and 95% confidence interval from a multivariate logistic regression analysis to estimate the relationship between patients' characteristics and patient and physician satisfaction. Covariates included patients' age, gender, education, disease severity measured by BSA affected by psoriasis, country, therapy and DLQI score. The results are presented as: a) Patient satisfaction; b) Physician satisfaction.*

Conclusion

This study demonstrates both patients and physicians were more satisfied with biologic therapy than non-biologic therapy. Patients and physicians who responded that they were unsatisfied with treatment were associated with moderate-to-severe disease and low HRQoL regardless of therapy type. New psoriasis treatments are needed that reduce moderate-to-severe psoriasis in a greater proportion of patients.

Potential conflicts of interest

This study was funded by Janssen Research and Development, LLC. Amanda Teeple, Seina Lee, Steven Fakharzadeh and Nan Li are employed by Janssen, and hold stock. Reggie Villacorta was affiliated with Janssen R&D during the development of this manuscript. James Lucas is a paid consultant to Janssen and an employee of Adelphi Real World. Adelphi Real World provided medical writing support during the preparation of the manuscript.

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Table 1. *Patients' and physicians' characteristics by country*

	Pooled	USA	UK	Spain	Italy	Germany	France
Physician characteristics							
Physician sample size, N	282	70	10	43	60	58	41
Practice type[1] N (%)							
Hospital practice type only	75 (26.6)	0 (0.0)	7 (70.0)	16 (37.2)	9 (15.0)	25 (43.1)	18 (43.9)
Office practice type only	108 (38.3)	62 (88.6)	0 (0.0)	4 (9.3)	4 (6.7)	30 (51.7)	8 (19.5)
Hospital, office or other practice type	99 (35.1)	8 (11.4)	3 (30.0)	23 (53.5)	47 (78.3)	3 (5.2)	15 (36.6)
Gender[1] N (%)							
Female	129 (45.7)	26 (37.1)	4 (40.0)	29 (67.4)	26 (43.3)	24 (41.4)	20 (48.8)
Male	149 (52.8)	44 (62.9)	6 (60.0)	14 (32.6)	30 (50.0)	34 (58.6)	21 (51.2)
Not reported	4 (1.4)	0 (0.0)	0 (0.0)	0 (0.0)	4 (6.7)	0 (0.0)	0 (0.0)
Years in practice[1] N (%)							
0 to 6 years	50 (17.7)	6 (8.6)	1 (10.0)	20 (46.5)	11 (18.3)	6 (10.3)	6 (14.6)
7 to 12 years	77 (27.3)	13 (18.6)	7 (70.0)	14 (32.6)	19 (31.7)	17 (29.3)	7 (17.1)
13 to 19 years	66 (23.4)	19 (27.1)	1 (10.0)	6 (14.0)	11 (18.3)	20 (34.5)	9 (22.0)
20 to 35 years	88 (31.2)	32 (45.7)	1 (10.0)	3 (7.0)	18 (30.0)	15 (25.9)	19 (46.3)
Not reported	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.7)	0 (0.0)	0 (0.0)
Patient characteristics							
Patient sample size n	1651	394	45	345	298	336	233
Education[1] N (%)							
Post graduate	104 (6.3)	34 (8.6)	4 (8.9)	17 (4.9)	2 (0.7)	8 (2.4)	39 (16.7)
College graduate	648 (39.2)	244 (61.9)	29 (64.4)	120 (34.8)	38 (12.8)	142 (42.3)	75 (32.2)
High school graduate	579 (35.1)	83 (21.1)	11 (24.4)	119 (34.5)	170 (57.0)	127 (37.8)	69 (29.6)
No high school graduate	320 (19.4)	33 (8.4)	1 (2.2)	89 (25.8)	88 (29.5)	59 (17.6)	50 (21.5)
Employment status[1] N (%)							
Employed	991 (60.0)	277 (70.3)	31 (68.9)	187 (54.2)	153 (51.3)	192 (57.1)	151 (64.8)
Not in labor force	584 (35.4)	113 (28.7)	12 (26.7)	141 (40.9)	137 (46.0)	121 (36.0)	60 (25.8)
Not employed	76 (4.6)	4 (1.0)	2 (4.4)	17 (4.9)	8 (2.7)	23 (6.8)	22 (9.4)
Therapy type[1] N (%)**							
Biologic	708 (42.9)	192 (48.7)	14 (31.1)	155 (44.9)	159 (53.4)	96 (28.6)	92 (39.5)
Systemic (with apremilast)	680 (41.2)	125 (31.7)	29 (64.4)	176 (51.0)	130 (43.6)	102 (30.4)	118 (50.6)
Topical therapy or phototherapy	251 (15.2)	72 (18.3)	2 (4.4)	13 (3.8)	8 (2.7)	134 (39.9)	22 (9.4)

None	12 (0.7)	5 (1.3)	0 (0.0)	1 (0.3)	1 (0.3)	4 (1.2)	1 (0.4)
Gender, N (%)							
Male	914 (55.4)	213 (54.1)	24 (53.3)	205 (59.4)	144 (48.3)	188 (56.0)	140 (60.1)
Female	737 (44.6)	181 (45.9)	21 (46.7)	140 (40.6)	154 (51.7)	148 (44.0)	93 (39.9)
Race/ ethnicity[1] N (%)							
White Caucasian	1515 (91.8)	337 (85.5)	34 (75.6)	317 (91.9)	289 (97.0)	322 (95.8)	216 (92.7)
Non-white Caucasian*	136 (8.2)	57 (14.5)	11 (24.4)	28 (8.1)	9 (3.0)	14 (4.2)	17 (7.3)
Body surface area[1] N (%)							
Mild (0% to 2%)	586 (35.5)	105 (26.6)	19 (42.2)	163 (47.2)	143 (48.0)	73 (21.7)	83 (35.6)
Moderate (3% to 10%)	638 (38.6)	165 (41.9)	17 (37.8)	124 (35.9)	116 (38.9)	127 (37.8)	89 (38.2)
Severe (11% to 80%)	427 (25.9)	124 (31.5)	9 (20.0)	58 (16.8)	39 (13.1)	136 (40.5)	61 (26.2)
Age[2] years	44.6 [43.9 to 45.3]	44.5 [43.1 to 46.0]	42.1 [38.1 to 46.1]	47.6 [46.0 to 49.3]	43.5 [42.2 to 44.8]	41 [39.5 to 42.4]	47.1 [45.4 to 48.9]
Charlson comorbidity index[2,3]	0.86 [0.79 to 0.93]	0.86 [0.71 to 1.01]	0.53 [0.26 to 0.80]	1.18 [0.99 to 1.36]	0.63 [0.49 to 0.77]	0.59 [0.46 to 0.73]	1.12 [0.90 to 1.33]

[1]Univariate statistical comparisons across countries show significant differences (P<0.05); [2]Mean with 95% confidence intervals in brackets; [3]The Charlson comorbidity index score was calculated for each patient as the total of the patient's weighted comorbid conditions. A higher comorbidity index indicates an increased severity of condition. *Non-white Caucasian included African American, Asian, Hispanic, Middle East/African and other, mixed, NA. **Biologic: using any biologic therapy from adalimumab, etanercept, infliximab, ustekinumab, or golimumab; systemic therapy: no biologic and using any systemic therapy from methotrexate, cyclosporine, acitretin, apremilast, fumarate, or other; topical therapy or phototherapy: no biologic or systemic therapy and using any phototherapy/ topical therapy from topical corticosteroid, topical non-corticosteroid, phototherapy, systemic corticosteroid or local injected corticosteroid. Abbreviations: USA: United States of America; UK: United Kingdom.

Table 2. *Disease severity (defined by BSA affected by psoriasis) by country*

Treatment type*	Mild (0% to 2%) N (%)	Moderate (3% to 10%) N (%)	Severe (11% to 80%) N (%)
France (N=233)			
Biologic	41 (44.6)	35 (38.0)	16 (26.2)
Systemic (with apremilast)	38 (32.2)	44 (37.3)	36 (30.5)
Topical therapy or phototherapy	4 (18.2)	10 (45.5)	8 (36.4)
None	0 (0)	0 (0)	1 (0.4)
Germany (N=334)			
Biologic	27 (28.1)	36 (37.5)	33 (34.4)
Systemic (with apremilast)	20 (19.8)	52 (40.9)	29 (28.7)
Topical therapy or phototherapy	22 (16.5)	39 (29.3)	72 (54.1)
None	4 (100.0)	0 (0)	0 (0)
Italy (N=298)			
Biologic	90 (56.6)	50 (31.4)	19 (48.7)
Systemic (with apremilast)	47 (36.2)	63 (48.5)	20 (15.4)
Topical therapy or phototherapy	5 (1.7)	3 (1.0)	0 (0)
None	1 (100.0)	0 (0)	0 (0)
Spain (N=344)			
Biologic	78 (50.7	48 (31.2)	28 (18.2)
Systemic (with apremilast)	75 (42.6)	72 (40.9)	29 (16.5)
Topical therapy or phototherapy	9 (69.2)	3 (23.1)	1 (7.7)
None	0 (0)	1 (0.3)	0
UK (N=45)			
Biologic	6 (42.9)	5 (35.7)	3 (6.7)
Systemic (with apremilast)	12 (41.4)	12 (41.4)	5 (17.2)
Topical therapy or phototherapy	1 (50.0)	0 (0)	1 (50.0)
None	0 (0)	0 (0)	0 (0)
USA (N=393)			

Biologic	65 (34.0)	76 (39.8)	50 (26.2)
Systemic (with apremilast)	23 (18.4)	50 (40.0)	52 (41.6)
Topical therapy or phototherapy	14 (19.4)	38 (52.8)	20 (27.8)
None	2 (40.0)	1 (20.0)	2 (40.0)

*Biologic: using any biologic therapy from adalimumab, etanercept, infliximab, ustekinumab, or golimumab; systemic therapy: no biologic and using any systemic therapy from methotrexate, cyclosporine, acitretin, apremilast, fumarate, or other; topical therapy or phototherapy: no biologic or systemic therapy and using any phototherapy/ topical therapy from topical corticosteroid, topical non-corticosteroid, phototherapy, systemic corticosteroid, or local injected corticosteroid. Abbreviations: USA: United States of America; UK: United Kingdom.

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Table 3. *Patient and physician treatment satisfaction by country*

	Patient satisfaction (%)	Physician satisfaction (%)
All patients		
Non-biologic therapy (N=931)	64.12	69.71
Biologic therapy (N=708)	74.72	81.78
P value	<0.0001	<0.0001
All EU5 countries		
Non-biologic therapy (N=734)	66.62	73.84
Biologic therapy (N=516)	77.13	82.75
P value	<0.0001	0.0002
France		
Non-biologic therapy (N=140)	67.86	61.43
Biologic therapy (N=92)	79.35	79..35
P value	0.055	0.004
Germany		
Non-biologic therapy (N=236)	58.05	82.20
Biologic therapy (N=96)	77.08	81.25
P value	0.001	0.835
Italy		
Non-biologic therapy (N=138)	78.26	76.09
Biologic therapy (N=159)	81.13	89.31
P value	0.539	0.002
Spain		
Non-biologic therapy (N=189)	67.72	70.90
Biologic therapy (N=155)	72.26	79.35
P value	0.362	0.073
UK		
Non-biologic therapy (N=31)	67.74	74.19
Biologic therapy (N=14)	71.43	78.57
P value	0.805	0.752
USA		
Non-biologic therapy (N=197)	54.82	54.31
Biologic therapy (N=192)	68.23	79.17
P value	0.007	<0.0001

Percentage satisfaction is reported relative to the number of patients within a given therapy group (biologic therapy or non-biologic therapy). Patients who received no therapy were excluded from therapy stratified analyses (N=12). Patients who received topical therapy/ phototherapy or systemic therapy, including apremilast, were grouped into the 'non-biologic' category; whereas patients who received adalimumab, etanercept, infliximab, ustekinumab, or golimumab were grouped into the 'biologic' category. N values represent patient numbers within each country. P values were calculated from Chi-squared test for statistically significant differences in patient and physician satisfaction between patients using biologic therapy and non-biologic therapy.