

**Original**

**Patient satisfaction with current psoriasis treatment: a real-world study in the USA**

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**Abstract**

Psoriasis patients often report dissatisfaction with treatment. However, it is less clear how the severity of key psoriasis symptoms (painful skin, itching, and scaling) as well as overall disease severity influence patient dissatisfaction levels. Using the Adelphi 2011/2013 Psoriasis Disease Specific Programmes, two “real world” surveys of US dermatologists and their patients, patient satisfaction was evaluated. Dermatologists provided data on disease characteristics, while patients indicated their satisfaction with existing treatment. Physician-reported severity (none, mild, moderate/severe) of psoriasis-related itching, pain, and scaling, overall disease severity (mild, moderate and severe) and therapy type were compared by patient satisfaction levels (satisfied vs. dissatisfied). Multivariate regressions examined the relationship between patient satisfaction, clinical symptoms, and psoriasis overall disease severity, controlling for differences in patient demographics and comorbidities. The sample comprised 633 psoriasis patients (56% male) with a mean age of 45. Overall, 18% of patients reported dissatisfaction with their psoriasis treatment. Dissatisfied patients were more likely to have moderate (65% vs. 40%) or severe (21% vs 3%) psoriasis compared to patients who were satisfied (both  $p < 0.05$ ). Dissatisfied patients were also more likely to have more severe pain (30% moderate-to-severe pain vs. 9%), more severe itching (61% moderate-to-severe itching vs. 25%), and more severe scaling (68% moderate-to-severe scaling vs. 33%) than satisfied patients (all  $p < 0.05$ ). Multivariate analyses confirmed these results. Clinicians should be aware that some psoriasis patients, especially those with severe overall disease or symptoms, may be dissatisfied and are in need of better treatment.

**Introduction**

Psoriasis is a chronic, immune-mediated disease that affects approximately 3% of the US population [1]. Patients experience symptoms that include itching, painful skin, and scaling, and skin involvement ranges from small localized patches to extensive disease [2, 3]. There is currently no cure for psoriasis and patients typically experience periods of remission followed by symptomatic recurrences that vary in severity.

Quality of life (QoL) is often negatively impacted by psoriasis [4, 5]. Compared with controls, patients are significantly less satisfied with their body, sexual relationships, social, familial and professional interactions, as well as with their own health [6]. A study of 114 patients with psoriasis found that patients reporting a poorer lifetime QoL were less satisfied with current treatments,

worried that their psoriasis would worsen, and felt poorer general health compared with those with a higher lifetime QoL [7]. These studies highlight the considerable psychological impact of psoriasis as a current area of unmet need that should be addressed to improve the care of these patients.

Treatment selection is guided by the nature and severity of the patient's symptoms [8]. Options include topical agents, phototherapy, non-biologic systemic agents, and biologic agents. While the clinical effectiveness of these treatments has been widely evaluated, patient satisfaction with treatment is also an important factor to consider. This relevant metric may be related to adherence to treatment, QoL and patient preference [9, 10,11].

Recent studies suggest that the levels of dissatisfaction with treatments for psoriasis is high. In addition, treatment received for psoriasis may impact overall patient satisfaction and patient satisfaction may be associated with patient perceived disease severity [12,13, 14]. Over half of patients with psoriasis surveyed between 2011-2013 indicated that they were dissatisfied with their treatment [12]. In a cross-sectional study among 1,182 patients with moderate-to-severe psoriasis, the overall satisfaction was highest among patients receiving biologic monotherapy, biologic-methotrexate combinations, or phototherapy and lowest for those receiving topical therapies only or acitretin. In addition, there was a modest but significant correlation between overall satisfaction, measures of disease severity (the Psoriasis Area and Severity Index) and QoL (Dermatology Life Quality Index) [13].

Understanding the drivers behind patient dissatisfaction is key as it may help identify subgroups in which this is a particular problem. Lower satisfaction with topical agents compared with biologic therapies is well documented [13, 14, 15]. However, the relationship between patient satisfaction and disease severity, and in particular, symptom severity, has not been well understood. The aim of this research was to evaluate the characteristics of patients who self-reported dissatisfaction with the level of control achieved over their psoriasis and identify the factors that differentiated those patients from those who self-reported being satisfied.

## Methods

This was a retrospective database analysis using data from the Adelphi 2011 and 2013 Psoriasis Disease Specific Programme (DSP®) [16]. The Adelphi Psoriasis DSP is a real-world, cross-sectional survey of patients with psoriasis and their treating dermatologists in the US. Data collection was conducted in 2011 and 2013 and included a Patient Self-Completion (PSC) questionnaire and a physician-reported Patient Record Form (PRF). Information about the study was described at the front of the PSC questionnaire and patients indicated their willingness to complete the PSC via an anonymous check box. The research was conducted in full accordance with the US Health Insurance Portability and Accountability Act 1996 (HIPAA; [www.hhs.gov/ocr/privacy/](http://www.hhs.gov/ocr/privacy/)). All data were collected through local fieldwork partners and fully de-identified prior to receipt by Adelphi. Full details of the DSP methodology have previously been published [16].

### Study population

A geographically diverse sample of physicians across the US was recruited. From the final sample of 149 dermatologists, 33% were based in the East, 16% from the South, 24% from the Midwest, and 26% from the West. The majority of dermatologists (92.2%) were office based. All were required to have obtained their medical degree between 1972 and 2010 and to personally manage the care of patients with psoriasis. Each physician was asked to complete PRFs for the next 7 patients consulting with psoriasis. These patients had to meet at least one of the following criteria: diagnosed with psoriasis and ever had an affected body surface area (BSA) of >10%; ever perceived by a dermatologist as having moderate or severe psoriasis; ever had their psoriasis treated with a systemic therapy. Eligible patients were invited to complete the PSC on a voluntary basis.

### Study measures

The PRF collected information on patient demographics, current overall disease severity (mild, moderate, or severe psoriasis), current symptom severity for psoriasis-related itching, pain, and scaling (none, mild, moderate, or severe), details of current treatment (none/topical, phototherapy, non-biologic systemic and biologic), and concomitant medical conditions (psoriatic arthritis, hypertension, elevated cholesterol, anxiety, depression and diabetes). In the PSC, patients were asked to indicate how satisfied they were with the current level of control achieved over their psoriasis.

### Statistical analyses

Two groups were constructed based on patient-reported satisfaction levels: patients satisfied and patients not satisfied. For the severity levels of itching, painful skin and scaling, there were relatively small numbers in the moderate and severe categories, respectively. Consequently, for each symptom these levels were combined to create a single moderate-to-severe group. For

therapy type, patients were categorized according to their highest level of treatment currently received: none/topical < phototherapy < non biologic systemic < biologic.

Psoriasis overall disease severity (mild, moderate, severe), the severity of psoriasis-related itching, pain, and scaling (none, mild, moderate-to-severe), and therapy level (none/topical < phototherapy < non biologic systemic < biologic) were compared by patient satisfaction levels.

Descriptive statistics were reported (mean and standard deviation for continuous variables; frequencies for categorical variables). Statistical comparisons between satisfied and dissatisfied patient groups were conducted using Mann-Whitney tests for continuous variables and Fisher's Exact or Chi-Squared tests for categorical variables. Ordered logistic regression was used to examine the relationship between disease severity, symptom severity, and therapy type with patient dissatisfaction, controlling for differences in demographics (age, gender, ethnicity, body mass index [BMI]) and comorbidities (psoriatic arthritis, hypertension, hyperlipidemia, anxiety, depression, and diabetes). Statistical significance was set at 0.05, and all analyses were performed in STATA statistical software version 13.1 (StataCorp, 2013. Stata statistical software: Release 13. College Station, TX, StataCorp LP).

A small number of missing values within the questionnaires were anticipated owing to errors when completing the PRF/PSC as well as questions deliberately being unanswered because of imperfect knowledge or preference. Where missing values were found for a particular variable, that patient was removed from all analyses involving that variable. However, data relating to these patients were still included in other analyses.

## Results

PRFs and corresponding PSCs were obtained for 633 patients. The characteristics of the patient population are shown in Table 1. Overall, 114 (18%) of patients reported that they were dissatisfied with the level of control achieved for their psoriasis. On average, the patients were 44.6 years old, had been diagnosed with psoriasis for 5.9 years and had a mean affected BSA of 9.7%. In total, 24% of the patients were obese (body mass index (BMI) > 30), 39% were overweight (BMI >25 and ≤ 30) and 37% were underweight to normal (≤25). BSA affected by psoriasis was higher among those reporting dissatisfaction with their current level of control than among those reporting satisfaction (16% vs. 8.4%, p<0.05).

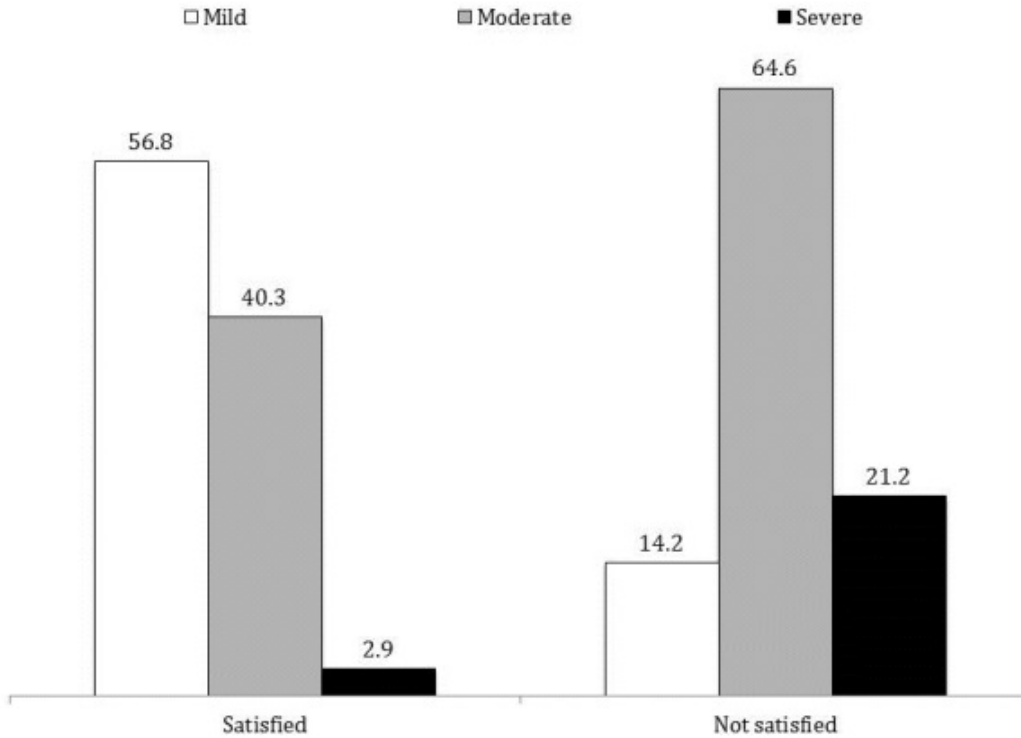
**Table 1.** Characteristics of patients by self-reported satisfaction with current psoriasis control

	<b>Total (N=633)</b>	<b>Satisfied (N=519)</b>	<b>Dissatisfied (N=114)</b>
<b>Age, mean years (SD)</b>	44.6 (15.4)	45.1 (15.3)	42.4 (16.1)
<b>Gender, % male</b>	56.2	57.0	52.6
<b>BMI: (%)</b>			
<b>≤25 (underweight to normal)</b>	36.9	38.2	30.3
<b>&gt;25 and ≤30 (overweight)</b>	39.1	38.4	42.4
<b>&gt;30 (obese)</b>	24.0	23.4	27.3
<b>Ethnicity, % Caucasian</b>	87.8	87.3	90.2*
<b>Years since diagnosis, mean (SD)</b>	5.9 (8.3)	6.0 (8.1)	5.8 (8.9)
<b>BSA affected, mean % (SD)</b>	9.7 (11.3)	8.4 (9.4)	16.0 (15.9)*

SD = standard deviation; BMI = body mass index; BSA = body surface area affected

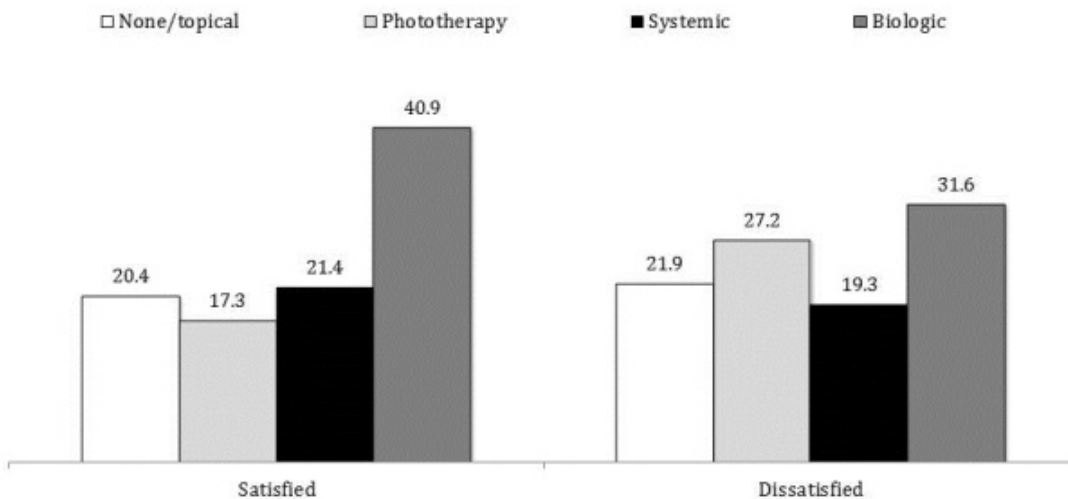
\*P<0.05 patient satisfied vs. patient dissatisfied

Compared to patients who were satisfied, patients who were dissatisfied were less likely to have mild psoriasis (14.2% vs. 56.8%) and more likely to have moderate (64.6% vs. 40.3%) or severe psoriasis (21.2% vs. 2.9%) (p<0.05). (Figure 1)



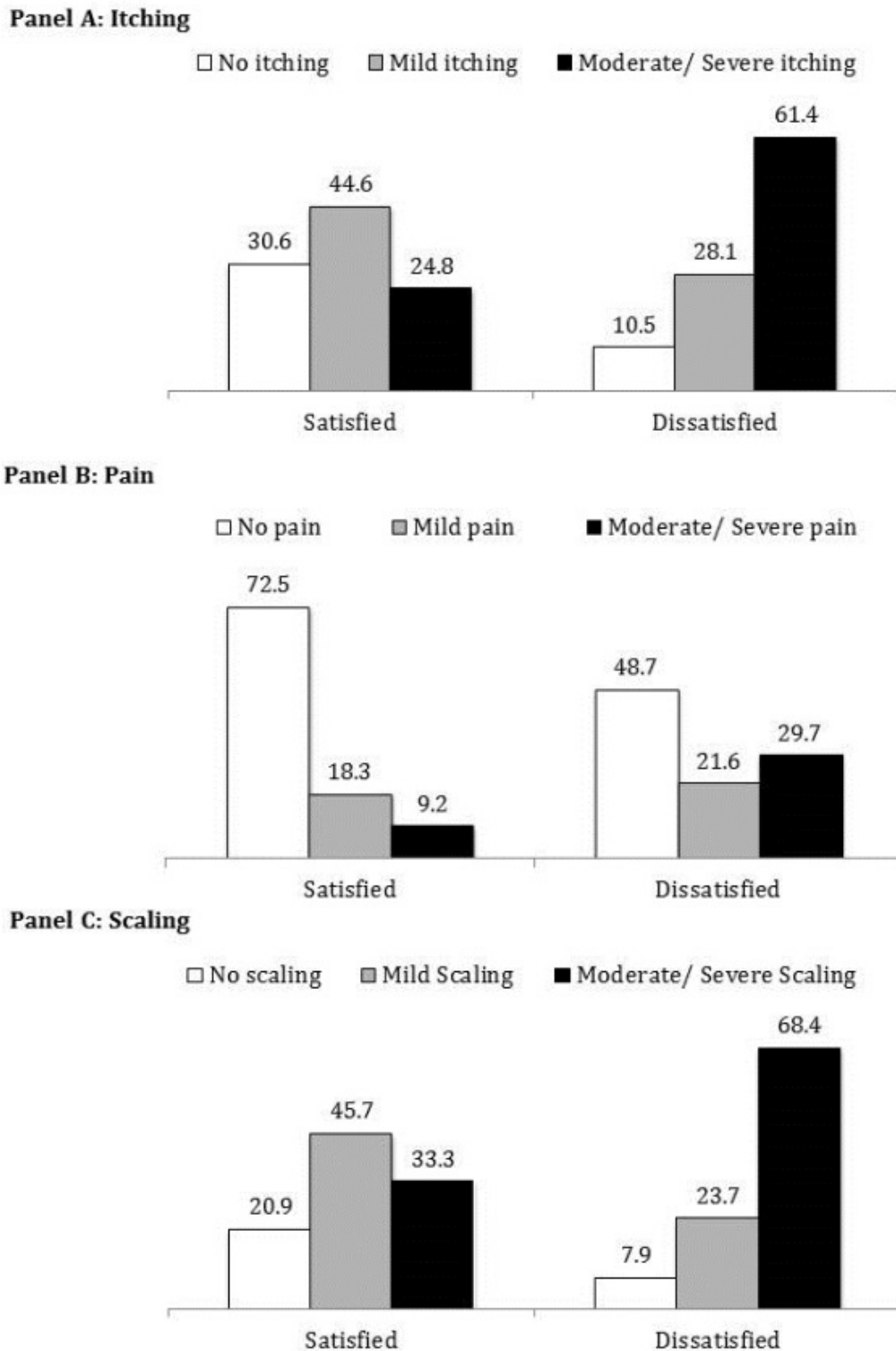
**Figure 1.** Distribution of patient's overall disease severity by patient satisfaction  $p < 0.05$  (Satisfied vs. not satisfied)

Dissatisfied patients compared to patients who were satisfied were less likely to have no itching (10.5% vs. 30.6%) and mild itching (28.1% vs. 44.6%) but were more likely to have moderate-to-severe itching (61.4% vs. 24.8%) ( $p < 0.05$ ) (Figure 2). For pain, dissatisfied compared to satisfied patients were less likely to have no pain (48.7% vs. 72.5%) but were more likely to have mild pain (21.6% vs. 18.3%) and moderate-to-severe pain (29.7% vs. 9.2%) ( $p < 0.05$ ). Similarly, dissatisfied patients compared to patients who were satisfied were less likely to have no scaling (7.9% vs. 20.9%) and mild scaling (23.7% vs. 45.7%) but were more likely to have moderate-to-severe scaling (68.4% vs. 33.3%) ( $p < 0.05$ ).



**Figure 2.** Distribution of key psoriasis clinical symptoms severity by patient satisfaction  $p < 0.05$  for all comparisons (satisfied vs. not satisfied)

Biologic use (31.6% vs. 40.9%), as well as the non-biologic systemic therapy use (19.3% vs. 21.4%), were numerically lower among the dissatisfied compared to satisfied patients (Figure 3). In contrast, dissatisfied patients were more likely to be in receipt of phototherapy (27.2% vs. 17.3%) and none/topical treatment (21.9% vs. 20.4%) compared to satisfied patients. However, the between group differences in current therapy level did not reach statistical significance ( $p=0.07$ ).



**Figure 3.** Distribution of psoriasis therapy type by patient satisfaction. The highest level of therapy currently prescribed: none/topical < phototherapy < non-biologic systemic < biologic. Comparison between satisfied and not satisfied patients did not reach significance ( $p=0.07$ ).

### Factors associated with patient dissatisfaction

Table 2 summarizes the association between patient satisfaction, psoriasis overall disease severity, symptom severity of psoriasis-related itching, pain and scaling, and current treatment type. Ordered logistic regression analyses were conducted where between

group differences in demographics (age, gender, ethnicity, BMI) and comorbidities (psoriatic arthritis, hypertension, hyperlipidemia, anxiety, depression, and diabetes) were controlled. Patients dissatisfied with their current levels of disease control were more likely to have more severe overall disease (odds ratio [OR] = 8.6), more severe itching (OR = 3.6), more severe pain (OR = 3.0), and more severe scaling (OR = 4.5) (all p<0.05). Analyzing the highest level of current treatment received (none/topical <phototherapy < non-biologic systemic < biologic) did not reveal an association with patient dissatisfaction. The presence of comorbid psoriatic arthritis was associated with increased overall severity (OR= 1.6), increase severity of itching (OR=2.4), increased severity of pain (OR=3.4) and a higher therapy level (OR=1.9) (all p<0.05).

**Table 2.** Multivariate regression results: relationship between patient satisfaction level, symptom severity, and therapy type

	<b>Increased disease severity</b> Odds ratio (95% CI) <sup>~</sup>	<b>More severe itching</b> Odds ratio (95% CI) <sup>~</sup>	<b>More severe pain</b> Odds ratio (95% CI) <sup>~</sup>	<b>More severe scaling</b> Odds ratio (95% CI) <sup>~</sup>	<b>Higher level therapy type<sup>†</sup></b> Odds ratio (95% CI) <sup>~</sup>
Patient not satisfied	8.6* (4.7–15.7)	3.6* (2.1–6.3)	3.0* (1.7–5.5)	4.5* (2.5–8.1)	0.7 (0.5–1.1)
Age	1.0 (1.0-1.0)	1.0 (1.0-1.0)	1.0 (1.0-1.0)	1.0* (1.0-1.0)	1.0 (1.0-1.0)
Male	1.0 (0.8-1.5)	0.8 (0.6-1.2)	0.6* (0.4-1.0)	0.9 (0.6-1.2)	0.9 (0.7-1.2)
Non-Caucasian	1.1* (1.1-2.9)	1.0 (0.6-1.8)	1.2 (0.6-2.4)	2.0* (1.2-3.4)	0.7 (0.4-1.3)
BMI - >25 and ≤30	1.7 (0.5-1.2)	0.9 (0.6-1.4)	1.0 (0.6-1.7)	0.7 (0.5-1.0)	1.8* (1.2-2.6)
BMI - >30 and ≤35	0.8 (0.5-1.5)	1.0 (0.6-1.8)	1.5 (0.9-2.7)	0.6 (0.4-1.1)	1.5 (1.0-2.4)
BMI - >35	0.9 (0.8-3.0)	1.3 (0.6-2.8)	1.4 (0.6-3.2)	0.6 (0.3-1.2)	1.5 (0.8-2.8)
Psoriatic arthritis	1.6* (1.2-4.0)	2.4* (1.2-4.9)	3.4* (1.5-7.6)	1.5 (0.7-2.9)	1.9* (1.0-3.6)
Hypertension	2.2 (0.8-2.0)	0.8 (0.5-1.3)	1.3 (0.7-2.3)	0.9 (0.5-1.6)	1.3 (0.8-2.2)
Elevated cholesterol / Hyperlipidemia	1.3 (0.7-1.9)	1.2 (0.7-2.2)	0.9 (0.5-1.9)	1.0 (0.6-1.8)	1.2 (0.7-1.8)
Anxiety	1.1 (0.7-1.7)	1.2 (0.8-1.9)	1.3 (0.8-2.1)	1.0 (0.7-1.5)	1.1 (0.7-1.7)
Depression	1.1 (0.4-1.1)	0.9 (0.6-1.4)	1.2 (0.7-2.0)	0.5* (0.3-0.8)	1.1 (0.7-1.7)
Diabetes	0.7 (0.6-1.9)	1.1 (0.6-2.0)	1.8 (0.8-3.8)	1.2 (0.7-2.3)	0.8 (0.5-1.3)

Five separate ordered logistic regressions examined whether disease severity, symptom severity or therapy level predicted patient dissatisfaction while controlling for differences in demographics (age, gender, ethnicity, BMI and comorbidities (psoriatic arthritis, hypertension, hyperlipidaemic, anxiety, depression and diabetes)

† = None/topical, phototherapy, non-biologic systemic, biologic

\*p<0.05 (reference = patient satisfied)

## Discussion

Using the most recent data collected in the US from successive waves of the Adelphi Real World DSP [1], we examined the association between patient-reported satisfaction with the level of control achieved over their psoriasis, with overall disease severity, severity of psoriasis-related itching, pain and scaling symptoms, and current highest therapy level. Although many treatment options are available for psoriasis (topical agents, phototherapy, non-biologic systemic, and biologics), almost one-fifth of patients were dissatisfied. When patients were dissatisfied with their treatment, they were more likely to have more severe psoriasis and more severe psoriasis-related itching, pain, and scaling. In addition, there was a non-significant trend for patients who were not satisfied to be treated with a less aggressive level of therapy.

Identifying the reasons underlying treatment dissatisfaction is crucial because awareness of this could allow clinicians to take the best course of action required to improve care from the patient's perspective. Better satisfaction has been associated with improved treatment compliance and persistence so there may be important implications in terms of achieving optimal outcomes for patients [3]. Given the identified relationship between patient satisfaction and disease/symptom severity, dermatologists should give consideration to these clinical factors when deciding on the most appropriate treatment strategy. Although effective control of itching, skin pain, and scaling may be key for improved patient satisfaction, itching and skin pain are symptoms that are not readily observable. Therefore, an assessment of the severity of these symptoms will require focused communication with the patients.

Close to 50% of the patients who were not satisfied were currently not receiving any prescribed psoriasis treatment, topical therapy or phototherapy as their highest therapy level. Although not statistically significant, biologic use was lower among dissatisfied patients, despite a higher BSA affected for this group compared to those who were satisfied. This observation suggests that some patients may be in need of a more aggressive therapy to better treat their psoriasis. No treatment and under treatment among psoriasis patients in the US is a recognized problem [2]. However, it is possible that patients in this study who were dissatisfied were treated with appropriate therapies but obtained suboptimal results. If the latter is true, dermatologists may utilize this information to switch to another therapy to achieve greater satisfaction. Future studies may need to explore further the reasons behind patient dissatisfaction.

A limitation of the current research relates to the sample selection. The physician population was a geographically diverse cohort of practicing US dermatologists. However, PRFs were completed only for patients who consulted with their dermatologist during the study period, which may limit the generalizability of the results. Recent contact with a dermatologist in the present study may have enhanced the level of satisfaction at the time of survey completion and may indicate superior care experienced by these patients than among the typical psoriasis population. Compared with a previous population-based US study on patient dissatisfaction with current treatment options, we found the percentage of patients reporting dissatisfaction to be much lower (18% vs. 52% in Armstrong et al 2013) [2]. This difference warrants further consideration. Armstrong et al (2013) [2] collected data from 2003 through to 2011. Over this time, a reduction in the number of patients receiving "no treatment" and a corresponding increase in the availability and use of biologic agents was observed. These changes highlight the need to present more recent data. To this end, our study, describing data collected from 2011-2012, suggests that there may have been a marked improvement in the satisfaction amongst psoriasis patients in the US, although a population based study would be needed to confirm this suggestion. It is also relevant that the proportion of severe patients in the Armstrong study was over one third, which is notably higher than the proportion of severe patients in the present study (6.2%). The difference in the percentage of severe patients may also explain why satisfaction was higher in the present findings, indicating that severity might be predicted by patient satisfaction.

## Conclusion

Although a range of treatment options are currently available for psoriasis, almost one-fifth of patients surveyed were not satisfied with the level of control achieved for their psoriasis. The current data suggests that poor disease and symptom control are associated with dissatisfaction amongst patients. When psoriasis patients were not satisfied, they were more likely to have more severe overall disease and more severe itching, pain, and scaling.

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