Evaluating treatment choice among patients with moderate or severe psoriasis in the United States

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Synopsis

- This study explored the impact of novel oral psoriasis treatments on treatment choice among patients with moderate to severe psoriasis, utilizing a web-based randomized controlled trial
- The study aimed to evaluate patient preferences for novel oral treatments, including apremilast, TNFis, ustekinumab, topicals, and nonprescription treatments
- The final survey was administered to 882 patients
- Potential survey participants were provided with a link to the survey and completed screening questions to determine eligibility
- Inclusion criteria: Patients with moderate to severe psoriasis, residing in the United States, aged 18 years and older
- Exclusion criteria: Patients who were receiving treatment at the time of survey completion
- Primary objective: To elicit views on a new once-daily oral psoriasis treatment among patients with moderate to severe psoriasis using apremilast
- Secondary objectives: To rank the importance of treatment attributes to patients with moderate to severe psoriasis using apremilast, TNFis, and other treatments
- To identify factors associated with the choice of a new once-daily oral psoriasis treatment with efficacy superior to that of current therapies
- To explore the factors influencing treatment choice among patients with psoriasis
- Treatment attributes (route of administration, extent of skin clearance, laboratory monitoring, durability, safety, and dosing frequency)

Methods

- A web-based, randomized controlled trial of moderate to severe psoriasis patients
- Treatment groups: Apremilast (n = 344), TNFi (n = 242), Topical/phototherapy (n = 98), Ustekinumab (n = 98), Other
- Primary outcome: Intent to start the new treatment
- Secondary outcomes: Treatment status, treatment duration, Psoriasis Area and Severity Index (PASI), QoL
- Data collection: Patient survey
- Inclusion criteria: Patients aged 18 years and older with moderate to severe psoriasis
- Exclusion criteria: Patients who were receiving treatment at the time of survey completion

Results

- Among patients who were currently receiving treatment or who had never received treatment (n = 835), apremilast (41.2%) and TNFi (24.2%) were the most preferred treatments
- Factors associated with treatment choice: Psoriasis severity over the past week, comorbidities, age, race/ethnicity, and treatment status
- Treatment status: Patients currently receiving treatment were more likely to consider starting a new treatment (p = 0.030)
- Psoriasis severity: Patients with higher psoriasis severity were more likely to consider starting a new treatment (p < 0.001)
- Comorbidities: Patients with comorbidities were less likely to consider starting a new treatment (p = 0.012)
- Age: Older patients were more likely to consider starting a new treatment (p = 0.012)
- Race/ethnicity: Non-Hispanic White patients were more likely to consider starting a new treatment (p = 0.041)
- Conclusion: The factors influencing treatment choice among patients with psoriasis are multifaceted and include disease severity, comorbidities, age, race/ethnicity, and current treatment status.
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Synopsis

- While several psoriasis treatments are available and in development, different treatment modalities are associated with varying effectiveness, risks, and economic burden, and these factors are likely to influence patients' decisions related to their psoriasis treatment.

- This study explored the element of treatment decision-making driven by patient experiences.
  - A cross-sectional, web-based survey captured the demographic and clinical characteristics, treatment attributes affecting therapeutic decisions, and perceptions of a new, hypothetical, once-daily oral psoriasis treatment (deucravacitinib) among patients with moderate to severe plaque psoriasis.

- Understanding the factors that drive patients' treatment preference is crucial for guiding clinical decision-making.

Objectives

Primary

- To identify factors associated with the choice of a new once-daily oral psoriasis treatment with efficacy superior to that of existing oral therapies in patients with moderate to severe psoriasis currently receiving apremilast, tumor necrosis factor inhibitors (TNFis), ustekinumab, topicals, or nonprescription treatments.

Secondary

- To rank the importance of treatment attributes to patients with moderate to severe psoriasis using apremilast, TNFis, ustekinumab, topicals, or nonprescription treatments.

- To elicit views on a new once-daily oral psoriasis treatment among patients with moderate to severe psoriasis using apremilast, TNFis, ustekinumab, topicals, or nonprescription treatments.

Target product profile (deucravacitinib)

- Tablet formulation with once-daily dosing.

- Clinical studies showed:
  - 53% of patients reported clear/mostly clear skin within 4 months.
  - 83% of patients who reported a 75% reduction in psoriasis severity maintained this improvement at 1 year.
  - Non-serious adverse events, such as cold-like symptoms, headache, diarrhea, nausea, rash, and risk of herpes infection, led to few discontinuations.

- Regular laboratory monitoring is not required, although pre-initiation testing may be needed.

- Out-of-pocket costs may be similar to those of the alternative psoriasis treatments in consideration.
Methods

- A cross-sectional, web-based survey of the demographics and clinical characteristics of patients with psoriasis, their views on treatment characteristics that affect treatment-related decisions, and their perceptions of a new, hypothetical, once-daily oral psoriasis treatment
- Patients were assigned to predefined treatment groups: apremilast, a TNFi, ustekinumab, a topical therapy/phototherapy, and over-the-counter (OTC) treatments or no treatment, based on their self-reported current treatment at the time of the survey
- A hypothetical psoriasis treatment profile, described by dosage, efficacy, adverse effects, and out-of-pocket costs, was shown to the patients to elicit their views on: (1) interference with everyday life, (2) convenience, (3) treatment-related anxiety, and likelihood of initiating treatment, both (4) without a safety warning and (5) with a safety warning

Inclusion criteria
- ≥18 years of age
- Residing in the United States
- Able to read and understand English
- Physician-diagnosed (self-reported) moderate or severe plaque psoriasis

Exclusion criteria
- Mild psoriasis
- Lack of online consent for the web-based survey

Data collection process
- The study was reviewed and approved by an Institutional Review Board
- The study used a convenience sample of patients with moderate or severe psoriasis who were recruited by Global Perspectives to collect patient-reported data
- Patients were asked to complete an electronic patient survey that included questions from patient-reported outcome (PRO) instruments and de novo questions
- Potential survey participants were provided with a link to the survey and completed screening questions to determine eligibility, followed by an informed consent checkbox
- The final survey was administered to 882 patients

Statistical analysis
- Stepwise multivariable logistic regression was conducted to determine sociodemographic and clinical characteristics associated with the choice of the new treatment among patients who were currently receiving treatment or who had never received treatment
  - Independent variables: treatment group, age, sex, race/ethnicity, psoriasis severity over the past week, comorbidities, disease and treatment duration, presence of psoriatic arthritis (PsA) at baseline, number of flares, and number of body regions affected
- Treatment attributes (route of administration, extent of skin clearance, laboratory monitoring, durability, safety, and dosing frequency) were ranked as an ordinal category (scale of 1–6) by patients
- Chi-square test was conducted to detect significant differences between patient rankings of each treatment attribute and to assess the variations in patient views on the new oral treatment

Results

- Figure 1 shows the responses of the 5 baseline treatment groups surveyed
- The study sample included 882 patients (mean age = 45.7 [±12.8] years); the majority were female (67.7%), most were White (74.9%), and their average duration of time since psoriasis diagnosis was 14.9 (±11.8) years (Figures 2 and 3; Table 1)
- Of 882 patients, 818 (92.8%) were currently receiving treatment and had been on their current treatment for a mean of 2.9 (±4.8) years (Table 2)
- With their current treatment regimen, 50.8% of patients in the total study population described their psoriasis over the past week as mild, very mild, or none, while 36.5% reported it as moderate and 12.7% reported it as severe or very severe (Table 2)
Chi-square test was conducted to detect significant differences between patient rankings of each treatment attribute and to understand the factors that drive patients' treatment preference is crucial for guiding clinical decision-making.

The study sample included 882 patients (mean age = 45.7 ±12.8 years); the majority were female (67.7%), most were White (57.5%), and 74.9% had moderate to severe psoriasis severity over the past week as mild, very mild, or none. Regular laboratory monitoring was ranked least important by more than half (53.0%) of the patients.

The study sample was not representative of every person with psoriasis. Therefore, the results may not be generalizable to all people with psoriasis. The final survey was administered to 882 patients, and data collection was completed without public consent. The study was reviewed and approved by an Institutional Review Board.

The study compared several treatments: apremilast, TNF inhibitors, ustekinumab, topicals, or nonprescription treatments. The survey captured demographic and clinical characteristics, treatment attributes affecting psoriasis treatment, and psoriasis treatment outcomes. Non-serious adverse events, such as cold-like symptoms, headache, diarrhea, nausea, rash, and risk of herpes infection, led to discontinuation of treatment in 18.4% of patients, compared with 14.7% of patients due to lack of effectiveness. The survey asked patients to rank their treatment preferences.

The survey was presented at the 2022 Fall Clinical Dermatology Conference; October 20.

Methods
- Target product profile (deucravacitinib)
- To rank the importance of treatment attributes to patients with moderate to severe psoriasis using apremilast, TNF inhibitors, ustekinumab, topicals, or nonprescription treatments
- Participants included 882 patients
- The survey captured demographic and clinical characteristics, treatment attributes affecting psoriasis treatment, and psoriasis treatment outcomes
- Non-serious adverse events, such as cold-like symptoms, headache, diarrhea, nausea, rash, and risk of herpes infection, led to discontinuation of treatment in 18.4% of patients, compared with 14.7% of patients due to lack of effectiveness
- Data were analyzed using descriptive and inferential statistics

Figure 1. Targeted baseline treatment groups

Figure 2. Key baseline characteristics, by sex (A) and race/ethnicity* (B)

Table 2. Key baseline clinical characteristics

Table 3. Intent to start a new once-daily oral psoriasis treatment

Acknowledgments
- DW and KB: Dermatologics, Pfizer, Sanofi Genzyme, Sun, Regeneron, and UCB
- Other: Boehringer Ingelheim/Parexel, Bristol Myers Squibb, Dermavant, Dermira, Eli Lilly, EPI, Incyte, Leo, Janssen, Nimbus, Novartis, Ortho Dermatology, Regeneron, Roche, UCB, UCB Health, Vifor

Disclosures
- Consideration of the treatment characteristics that drive the decision-making of patients with psoriasis is crucial for guiding clinical decision-making.
Chi-square test was conducted to detect significant differences between patient rankings of each treatment attribute and to assess the variations in patient views on the new oral treatment.

The final survey was administered to 882 patients.

The study used a convenience sample of patients with moderate or severe psoriasis who were recruited by Global Perspectives to collect patient-reported data.

Methods

To rank the importance of treatment attributes to patients with moderate to severe psoriasis using apremilast, TNFis, ustekinumab, a topical therapy/phototherapy, and nonprescription treatments.

To identify factors associated with the choice of a new once-daily oral psoriasis treatment with efficacy superior to that of existing therapies.

Results

Non-serious adverse events, such as cold-like symptoms, headache, diarrhea, nausea, rash, and risk of herpes infection, led to few discontinuations.

53% of patients reported clear/mostly clear skin within 4 months.

TNFi, tumor necrosis factor inhibitor.

Table 1. Key baseline characteristics for all respondents by patient age

| Category                  | All respondents (N = 882) |
|---------------------------|---------------------------|
| Mean                      | 45.71                     |
| Median (Q1–Q3)            | 45                        |
| Range                     | 18–76                     |

*Percentages sum to >100% because respondents could select more than 1 insurance type, as applicable.

Table 2. Key baseline clinical characteristics

| Parameter                          | Statistic or category | All respondents, N = 882 (%) |
|------------------------------------|-----------------------|-----------------------------|
| Treatment status, n (%)            | Currently receiving treatment | 818 (92.8)                  |
|                                    | Was receiving treatment but has stopped | 47 (5.3)                    |
|                                    | Never received treatment | 17 (1.9)                    |
| Treatment duration, years          | Mean (SD) | 2.86 (4.81)                     |
|                                    | Median (Q1–Q3) | 1.0 (0.0-3.0)                   |
|                                    | Range | 0.0-42.0                         |
| Current treatment type, n (%)      | Over-the-counter nonprescription | 225 (25.7)                  |
|                                    | Topical prescription steroid | 230 (28.1)                  |
|                                    | Topical vitamin D analog | 49 (6.0)                    |
|                                    | Other topical treatment | 55 (6.7)                    |
|                                    | Ultraviolet light/phototherapy | 51 (6.2)                   |
|                                    | Apremilast | 356 (43.5)                     |
|                                    | Ustekinumab | 101 (12.3)                   |
|                                    | TNFi treatment | 251 (30.7)                   |
| Psoriasis severity over the past week, n (%) | None | 31 (14.8)                     |
|                                    | Very mild | 155 (17.6)                    |
|                                    | Mild | 162 (18.4)                    |
|                                    | Moderate | 322 (36.5)                    |
|                                    | Severe | 86 (9.8)                      |
|                                    | Very severe | 26 (2.9)                     |

B5A, body surface area; Q1–Q3, quartiles 1–3; SD, standard deviation; TNFi, tumor necrosis factor inhibitor.
• Among patients who were currently receiving treatment or who had never received treatment (n = 835), apremilast (41.2%) and TNFIs (29.0%) were the most commonly used treatments, and OTC or no treatment was the least common group (6.3%) (Table 3)
• Of patients who had never received treatment, 88.2% expressed intent to start the new oral psoriasis treatment, compared with 80.6% of patients who used nonprescription OTC treatment, 75.5% of patients who used ustekinumab, 74.0% of patients who used a TNFI, 69.4% of patients who used topical therapy, and 55.2% of patients who used apremilast (Figure 4)
• Willingness to start the new, once-daily oral treatment was high across all groups, including patients currently using apremilast
• In response to questions about the new treatment, 83.7% reported that it would be convenient, 65.0% reported that it would cause less anxiety than an injection or infusion, 55.3% reported that it would interfere less with their everyday life, and 50.2% reported that it would reduce their symptoms more than their current psoriasis treatment (Figure 5)

### Table 3. Intent to start a new once-daily oral psoriasis treatment

| Variable                              | Category                                      | Intent to start new treatment |
|---------------------------------------|-----------------------------------------------|--------------------------------|
|                                       |                                               | All, N = 835 (%) | Yes, n = 555 (%) | No, n = 280 (%) |
| Treatment group                       | Apremilast                                    | 344 (41.2)       | 190 (34.2)       | 154 (55.0)      |
|                                       | TNFI                                          | 242 (29.0)       | 179 (32.3)       | 63 (22.5)       |
|                                       | Ustekinumab                                   | 98 (11.7)        | 74 (13.3)        | 24 (8.6)        |
|                                       | Topical therapy                               | 98 (11.7)        | 68 (12.3)        | 30 (10.7)       |
|                                       | OTC or no treatment                           | 53 (6.3)         | 44 (7.9)         | 9 (3.2)         |
| Race/ethnicity                        | White                                         | 610 (73.1)       | 390 (70.3)       | 220 (78.6)      |
|                                       | Black                                         | 114 (13.7)       | 95 (17.1)        | 19 (6.8)        |
|                                       | Asian, American Indian/Alaska Native, Native Hawaiian/other Pacific Islander | 32 (3.8)         | 21 (3.8)         | 11 (3.9)        |
|                                       | Preferred not to answer                       | 54 (6.5)         | 29 (5.2)         | 25 (8.9)        |
|                                       | Other                                         | 25 (3.0)         | 20 (3.6)         | 5 (1.8)         |
| Psoriasis severity over the past week (based on a 6-point scale) | None                                          | 130 (15.6)       | 48 (8.6)         | 82 (29.3)       |
|                                       | Mild                                          | 308 (36.9)       | 197 (35.5)       | 111 (39.6)      |
|                                       | Moderate                                      | 298 (35.7)       | 228 (41.1)       | 70 (25.0)       |
|                                       | Severe                                        | 99 (11.9)        | 82 (14.8)        | 17 (6.1)        |

OTC, over the counter; TNFI, tumor necrosis factor inhibitor.
Chi-square test was conducted to detect significant differences between patient rankings of each treatment attribute and to present at the 2022 Fall Clinical Dermatology Conference; October 20.

Of 882 patients, 818 (92.8%) were currently receiving treatment and had been on their current treatment for a mean of 2.9 years. Results

- Able to read and understand English
- Residing in the United States
- A hypothetical psoriasis treatment profile, described by dosage, efficacy, adverse effects, and out-of-pocket costs, was shown.

Objectives

- Evaluating treatment choice among patients with moderate or severe psoriasis in the United States
- Making effective treatment recommendations in clinical practice

Table 1

| Parameter Statistic or category | All respondents, N = 882 (%) |
|--------------------------------|-----------------------------|
| Psoriasis severity over the past week, n (%) | Moderate 298 (35.7) 228 (41.1) 70 (25.0) |
| None 130 (15.6) 48 (8.6) 82 (29.3) |
| Other 164 (18.9) 120 (21.2) 44 (15.5) |

Table 2

| Race/ethnicity                     | Group 1: White (n = 354) | Group 2: Black (n = 344) | Group 3: Asian/Americas Hawaiian/other Pacific Islander (n = 63) | Group 4: Native Hawaiian/other Pacific Islander (n = 76) |
|-----------------------------------|--------------------------|--------------------------|----------------------------------------------------------------|------------------------------------------------------|
| Male (n = 439) (59.9%)            | 212 (48.4%)              | 171 (49.8%)              | 30 (47.4%)                                                      | 48 (63.2%)                                           |
| Female (n = 443) (40.1%)          | 227 (51.6%)              | 173 (50.2%)              | 33 (52.6%)                                                      | 28 (36.8%)                                           |

OTC, over the counter; TNFi, tumor necrosis factor inhibitor.

Figure 4. Intent to start a new once-daily oral treatment, by treatment group (A), race/ethnicity (B), and psoriasis severity over the past week (C), all P < 0.001

Figure 5. Views on a new once-daily oral treatment, by treatment group

TNFi, tumor necrosis factor inhibitor.
Only treatment group, race/ethnicity, and psoriasis severity were statistically significant factors in the model.

The following responses were examined for intent to start a new once-daily oral treatment (yes/no), by selected categories:

- 83% of Black respondents would start the new once-daily oral treatment.
  - Compared with White patients, the odds ratio (OR) of intent to start the new treatment was 2.4 (95% confidence interval [CI], 1.4–4.2) among Black respondents ($P = 0.036$).
- Intent to start the new once-daily oral treatment increased with psoriasis severity over the past week, with 76.5% of respondents with moderate psoriasis and 82.8% of respondents with severe disease answering “yes.”
  - Compared with patients with no psoriasis symptoms or signs over the past week, the OR of intent to start the new treatment was 3.2 (95% CI, 2.0–4.9) among patients with mild psoriasis, 5.0 (95% CI, 3.1–8.2) among patients with moderate psoriasis, and 7.6 (95% CI, 3.9–15.0) among patients with severe psoriasis; all $P < 0.001$.
- 79.6% of patients who responded that the new once-daily oral treatment would cause them less anxiety than an injection would start the new treatment.
- 87.6% of respondents who believed that the new once-daily oral treatment would reduce their symptoms more than their current treatment would start the new treatment.

- Asked to rank characteristics of psoriasis treatment in order of importance, 58.3% of respondents ranked “extent of skin clearance” as first or second, while 43.7% ranked “route of administration” as first or second (Figure 6).

- Laboratory monitoring was ranked least important by more than half (53.0%) of the patients.

**Figure 6. Reason for treatment choice ranking**

![Bar chart showing patient rankings for various treatment attributes](chart.png)
Conclusions

- This large, real-world study provided an account of how psoriasis impacts patients’ lives and treatment choices.
- Patients with severe disease, Black patients, and patients receiving injectable treatments were more likely to choose the new oral treatment compared with patients with mild disease, White patients, and patients receiving apremilast, respectively.
- Willingness to start the new psoriasis treatment was common among all treatment groups.
- The new treatment was viewed as causing less anxiety compared with injectables across all treatment groups.
- Extent of skin clearance and route of administration were reported as the top-ranked reasons for patients’ psoriasis treatment choice.
- Consideration of the treatment characteristics that drive the decision-making of patients with psoriasis is crucial for making effective treatment recommendations in clinical practice.

Reference

1. Feldman SR, et al. *J Health Econ Outcomes Res.* 2016;4:141-157.

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Disclosures

- **AWA:** Has served as a research investigator, scientific advisor, and/or speaker for AbbVie, Almirall, Arcutis Biotherapeutics, ASLAN, Beiersdorf, Boehringer Ingelheim/Parexel, Bristol Myers Squibb, Dermavant, Dermira, Eli Lilly, EPI, Incyte, Leo, Janssen, Nimbus, Novartis, Ortho Dermatologics, Pfizer, Sanofi Genzyme, Sun, Regeneron, and UCB.
- **LS, DD, SK, and VP:** Employees of and may own stock options in Bristol Myers Squibb.
- **NJ, SR, SJ, and DP:** Employees of OPEN Health, which received consulting fees from Bristol Myers Squibb.
- **DW and KB:** Employees of RTI Health Solutions, which received consulting fees from Bristol Myers Squibb.
The study sample included 882 patients (mean age = 45.7 [±12.8] years); the majority were female (67.7%), most were White (74.9%), and their average duration of time since psoriasis diagnosis was 14.9 (±11.8) years. Presented at the 2022 Fall Clinical Dermatology Conference; October 20.

Chi-square test was conducted to detect significant differences between patient rankings of each treatment attribute and to determine sociodemographic and clinical characteristics associated with their current treatment regimen. Out-of-pocket costs may be similar to those of the alternative psoriasis treatments in consideration. Regular laboratory monitoring is not required, although pre-initiation testing may be needed.

The study used a convenience sample of patients with moderate or severe psoriasis who were recruited by Global Perspectives to participate in the survey. Data collection process included 36% of patients who were using nonprescription treatments, 17% who had never received treatment, and 57% who had received treatment in the past. TNFi, tumor necrosis factor inhibitor.

Non-serious adverse events, such as cold-like symptoms, headache, diarrhea, nausea, rash, and risk of herpes infection, led to discontinuation of treatment. Table 2 shows the responses of the 5 baseline treatment groups surveyed.

Figure 1 shows the responses of the 5 baseline treatment groups surveyed. Figure 2 shows the key baseline characteristics, by sex (A) and race/ethnicity (B). The exploratory group included patients who were using nonprescription treatments (n = 36), patients who had never received treatment (n = 17), and patients who had received treatment in the past but were not currently receiving it (n = 499).

Uninsured patients were less likely to receive treatment compared to privately insured patients. Only treatment group, race/ethnicity, and psoriasis severity were statistically significant factors in the model. Intention to start the new once-daily oral treatment increased with psoriasis severity over the past week, with 76.5% of patients reporting they would start the new treatment if they experienced a symptom flare.

In response to questions about the new treatment, 83.7% reported that it would be convenient, 65.0% reported that it would reduce their symptoms more than their current psoriasis treatment, and 64.0% reported that it would reduce the time their symptoms interfered with their life. Willingness to start the new, once-daily oral treatment was high across all groups, including patients currently using apremilast (91.4%) and patients using other psoriasis treatments.