Demographics and the perception of psoriasis therapy adverse effects and treatment preference: A cross-sectional survey of a convenience sample of people with psoriasis

To the Editor: Despite advancements in psoriasis therapy, undertreatment remains an issue. Misconceptions might explain poor treatment adherence and perceptions of treatments may vary in different subpopulations. We assessed the association between demographics and peoples’ perception of psoriasis therapy adverse effects and treatment preference.

After institutional review board approval, a survey was completed by 298 subjects older than 18 years with self-reported psoriasis. Subjects were recruited online from a broad, diverse population via MTurk (Table I). Subjects selected the drug class (topical, injectable, oral, or phototherapy) with the most severe adverse effects, ranked the most likely adverse effects of injectables, and identified the drug class they most prefer. Age, sex, race/ethnicity, education, treatment status, and diagnosis duration were assessed via \( \chi^2 \) analysis.

Age, race/ethnicity, and education were not associated with participants’ perception of adverse effects and treatment preference. Sex and treatment status were significant factors in predicting the selection of injection site reactions as the most likely adverse effect of injectables, as well as the selection of injectables as the most preferred drug class (Table II). Diagnosis duration was a significant factor in predicting the selection of injectables as the drug class with the most severe adverse effects.

Injection site reactions (22%), nausea, vomiting, and diarrhea (18%), and sun sensitivity (16%) were the most commonly selected adverse effects of injectables. More women (73%) chose injection site reactions as the most common adverse effect versus men (55%; \( P < .01 \)). More men (30%) selected injectables as their most preferred drug class versus women (18%; \( P = .01 \)). More individuals who were not currently being treated (73%) chose injection site reactions versus those receiving treatment (62%; \( P = .04 \)). More individuals who were currently being treated (30%) selected injectables as their most preferred drug class versus those not receiving treatment (12%; \( P < .01 \)). More individuals with a psoriasis diagnosis of greater than 5 years’ duration (66%) selected injectables as the drug class with the most severe adverse effects versus those with one of less than 5 years’ duration (51%; \( P = .02 \)).

Women and those not currently being treated for psoriasis appear more likely to not prefer injectables (versus men and those receiving treatment), likely in part because of concern about injection site reactions. A longer history of psoriasis may be associated with preconceived misconceptions, which might explain why subjects with a longer history were more likely to consider injectables to have the most severe adverse effects. Fear or misunderstanding of adverse effects might prevent people from initiating biologics and may lead to undertreatment.

Documentation of diagnosis by a dermatologist, body surface area involvement, type of therapy used by participants, and reasoning behind responses were not reported. Subject-reported preference may not correlate with actual medication-receiving behavior. However, the study still provides information on how demographics are associated with preferred drug class versus those not receiving treatment.

Table I. Summary of baseline characteristics and demographic information

| Variable | All subjects (n = 298) |
|----------|-----------------------|
| Respondent |                         |
| Age, \( y \) | 35.3 ± 10.8 |
| Female sex (%) | 195 (65.4) |
| Race/ethnicity (%) |                     |
| White | 208 (69.8) |
| Black | 33 (11.1) |
| Hispanic or Latino | 17 (5.7) |
| Native American | 7 (2.4) |
| Asian or Pacific Islander | 20 (6.7) |
| Other | 13 (4.4) |
| Education level (%) |                     |
| No schooling completed | 1 (0.34) |
| High school graduate | 106 (35.6) |
| Bachelor’s degree | 139 (46.6) |
| Master’s degree | 34 (11.4) |
| Professional degree | 13 (4.4) |
| Doctorate degree | 5 (1.7) |
| Psoriasis history (%) |                     |
| Currently receiving treatment | 169 (56.7) |
| Diagnosis <5 y | 203 (68.1) |

*Values are presented as mean ± standard deviation.

© 2020 by the American Academy of Dermatology, Inc. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).
peoples’ perception of psoriasis therapy, which may help identify individuals at risk of undertreatment.

In all demographic subgroups, there is a wide range of perceptions and preferences, such that although some subgroups may tend to fear certain adverse effects or prefer particular drug classes, physicians may want to prepare to address various concerns and preferences for all patients. Alleviating concerns of adverse effects and broadening preference for various treatment options may be associated with an increased willingness to try new or different forms of therapy, which may help prevent undertreatment.

Table II. Multivariable analysis showing the impact of sex, current treatment status, and diagnosis duration on the perception of psoriasis therapy adverse effects and treatment preference

| Subjects                                                                 | No. (%) | P value |
|-------------------------------------------------------------------------|---------|---------|
| Selection of injectables as having the most severe adverse effects*     |         |         |
| Men                                                                     | 54 (55) | <.01    |
| Women                                                                   | 141 (73) | .04     |
| Currently receiving treatment                                           | 105 (62) | .04     |
| Not currently receiving treatment                                       | 94 (73)  | .04     |
| Diagnosis >5 y                                                          | 64 (67)  | .88     |
| Diagnosis <5 y                                                          | 135 (67) | .88     |
| Selection of ISR as the most common adverse effect of injectables †      |         |         |
| Men                                                                     | 54 (55) | <.01    |
| Women                                                                   | 141 (73) | .04     |
| Currently receiving treatment                                           | 105 (62) | .04     |
| Not currently receiving treatment                                       | 94 (73)  | .04     |
| Diagnosis >5 y                                                          | 64 (67)  | .88     |
| Diagnosis <5 y                                                          | 135 (67) | .88     |
| Selection of injectables as the most preferred drug class*              |         |         |
| Men                                                                     | 30 (30)  | .01     |
| Women                                                                   | 35 (18)  | .01     |
| Currently receiving treatment                                           | 50 (30)  | <.01    |
| Not currently receiving treatment                                       | 15 (12)  | <.01    |
| Diagnosis >5 y                                                          | 15 (16)  | .14     |
| Diagnosis <5 y                                                          | 33 (24)  | .14     |

ISR, Injection site reactions.
*Selected from list of drug classes, including topical versus injectable versus oral versus phototherapy.
†Selected from list of potential adverse effects, including mouth sores versus swelling or bruising on skin versus nausea, vomiting, or diarrhea versus increased risk of cancer versus upper respiratory infections versus reduced number of red blood cells, white blood cells, or platelets versus make you more sun sensitive versus decrease the effectiveness of birth control versus may cause liver damage versus increased risk of diabetes versus increased blood pressure.

Jeremy K. Bray, BA,a and Steven R. Feldman, MD, PhD,a,b,c

From Center for Dermatology Research, Department of Dermatology,a Department of Public Health Sciences,b and Department of Pathology,c Wake Forest School of Medicine, Winston-Salem, North Carolina.

Funding sources: None.

Conflicts of interest: Dr Feldman has received research, speaking, or consulting support from Galderma, GSK/Stiefel, Almirall, Leo Pharma, Baxter, Boehringer Ingelheim, Mylan, Celgene, Pfizer, Valeant, Taro, AbbVie, Cosmederm, Anacor, Astellas, Janssen, Lilly, Merck, Merz, Novartis, Regeneron, Sanofi, Novan, Parion, Quiring, National Biological Corporation, Caremark, Advance Medical, Sun Pharma, Suncare Research, Informa, UpToDate, and National Psoriasis Foundation. He is founder and majority owner of www.DrScore.com and founder and part owner of Causa Research, a company dedicated to enhancing patients’ adherence to treatment. Mr Bray has no conflicts of interest to declare.

Correspondence to: Jeremy K. Bray, BA, Department of Dermatology, Wake Forest School of Medicine, Medical Center Blvd, Winston-Salem, NC 27157-1071

E-mail: jbray@wakehealth.edu

REFERENCES
1. Armstrong AW, Robertson AD, Wu J, Schupp C, Lebwohl MG. Undertreatment, treatment trends, and treatment dissatisfaction among patients with psoriasis and psoriatic arthritis in the
United States: findings from the National Psoriasis Foundation surveys, 2003-2011. *JAMA Dermatol.* 2013;149:1180-1185.

2. Bray JK, Cline A, Feldman SR. Assessing perceived adverse effects of biologic medications for patients with psoriasis. *J Am Acad Dermatol.* 2020;82:766-768.

3. Buhrmester M, Kwang T, Gosling SD. Amazon’s Mechanical Turk: a new source of inexpensive, yet high-quality, data? *Perspect Psychol Sci.* 2011;6:3-5.

https://doi.org/10.1016/j.jclin.2020.05.001