Dermatol Ther (Heidelb) (2022) 12:2273–2283
https://doi.org/10.1007/s13555-022-00802-1

REVIEW

Mindfulness and Meditation for Psoriasis: A Systematic Review

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Received: August 6, 2022 / Accepted: August 25, 2022 / Published online: September 14, 2022

ABSTRACT

Psoriasis is a chronic, recurrent inflammatory skin condition in which flares are commonly associated with stress. One important non-pharmacological method for managing stress in patients with psoriasis is mindfulness and/or meditation. The objective of this review is to provide an update on research studies investigating the role of mindfulness and meditation in treating psoriasis symptoms, severity, and quality of life. Of six randomized control trials (RCTs) identified, five demonstrated improvement in self-administered psoriasis area and severity index (saPASI) after 8 or 12 weeks of guided meditation. One RCT and one non-randomized control trial reported mental health benefits in psoriasis patients following guided meditation. These results suggest that meditation can be used as a tool to improve both psoriasis skin severity and patient quality of life in the short term. More research is needed to evaluate the effect of meditation on psoriasis severity and quality of life in the long term.

Keywords: Meditation and psoriasis; Mindfulness and psoriasis; Stress and psoriasis; Brain–skin axis and psoriasis

Key Summary Points

This review examines the physical and psychological benefits of mindfulness and meditation as adjunct therapy in patients with moderate-to-severe plaque psoriasis.

Five of six randomized control trials (RCTs) reported improvement in self-administered psoriasis area and severity index (saPASI) scoring after 8 or 12 weeks of meditation and/or mindfulness interventions.

Two trials showed psychological improvement in psoriasis patients after meditation and/or mindfulness interventions.

Overall, these results suggest the possibility that meditation can be used as a tool to improve both psoriasis severity and patient quality of life in the short term.

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INTRODUCTION

Psoriasis is a chronic recurrent inflammatory skin condition where flares are commonly associated with stress. Both genetic and environmental factors play a role in the pathogenesis of psoriasis. Plaque psoriasis occurs via IL-17 pathways, wherein IL-23 promotes Th17 cell differentiation, resulting in IL-17 and IL-22 release and leading to skin inflammation, hyperproliferation, and keratinization [1]. Meditation and mindfulness represent non-pharmacological methods for managing stress [2]. Meditation and mindfulness are commonly used psychological interventions to manage a wide array of diseases not limited to the fields of psychiatry and psychology. Meditation and mindfulness-based therapies have shown promise in improving patient quality of life and physical symptoms in many chronic inflammatory diseases [3].

This review examines previous trials studying the effect of mindfulness and meditation on psoriasis severity and mental health measures and provides an update of randomized control trials (RCTs) and other studies investigating the effect of meditation and mindfulness on patients' self-administered psoriasis area and severity index (saPASI) and mental health.

METHODS

A review of Embase and PubMed databases was performed for studies investigating the effect of meditation on psoriasis management from January 1 1990 to March 3, 2022. Peer-reviewed original research published in English that aimed to determine meditation's effect on psoriasis quality of life and physical symptoms were included. Articles that did not describe clinical outcomes were excluded. In addition, all reviews were excluded aside from the most recently published systematic review [4]. After identification of 27 articles, two people reviewed each abstract followed by a full-text review of relevant articles (Fig. 1). All discrepancies were resolved by a third reviewer. Original research was identified by using the following keywords to search both Embase and PubMed: meditation and psoriasis; mindfulness and psoriasis; stress and psoriasis; brain–skin axis and psoriasis. The results of this search yielded one case–control study, six randomized clinical trials, and one non-randomized clinical trial. No case reports or case series were identified. The interventions of each study varied and ranged from mindfulness-based meditation, meditation with imagery, mindfulness-based stress reduction (MBSR), modified behavioral self-control therapy (MBSCT), mindfulness-based self-compassion therapy, mindfulness-based self-help therapy (MBSCT-SH), and mindfulness-based cognitive therapy (MBCT). Study participants who received some form of meditation and/or mindfulness intervention in addition to their current psoriasis treatment(s) were compared to participants who received treatment as usual (TAU). Psoriasis severity was measured through saPASI. Quality-of-life outcomes included measures of worry, rumination, anxiety, and depression. This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

RESULTS

Nine publications investigating the role of meditation and mindfulness on psoriasis quality of life and symptom severity were selected. Of these nine articles, one systematic review article, one case–control study, one non-randomized clinical trial, and six randomized clinical trials were included. Of the six RCTs, there were a total of 356 unique patients with psoriasis. The psychological interventions applied in psoriasis management fell under one category: meditation and mindfulness-based therapies. Results of the included studies are included in Table 1.

One of the first clinical trials to study psychological stress and psoriasis was performed by Gaston et al. [7]. This small, randomized control trial consisted of 24 patients that suffered from scalp psoriasis. Each patient was randomly assigned to one of four groups: meditation

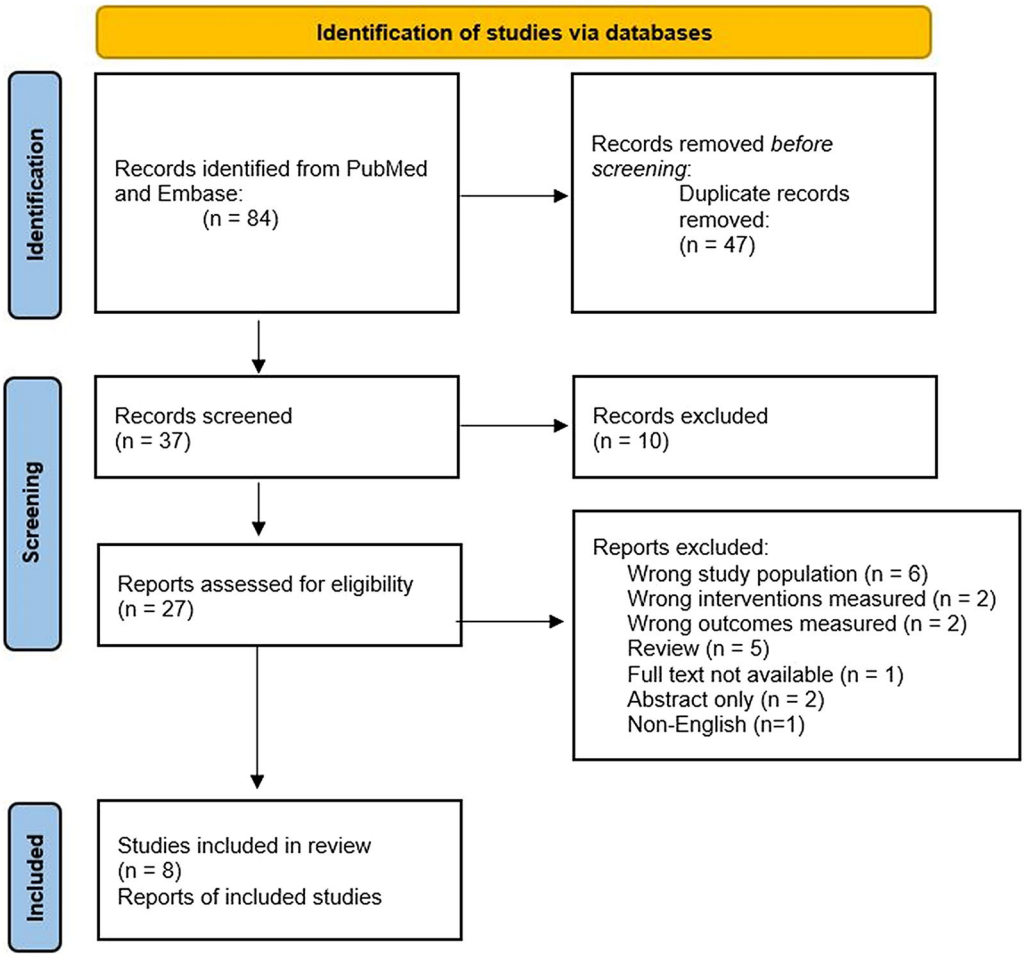

Fig. 1 Preferred reporting items for systematic reviews and meta-analyses (PRISMA) diagram illustrating study selection for systematic review [5]

($n = 5$); meditation and imagery ($n = 4$); waiting list ($n = 5$); and no treatment control group ($n = 4$) [7]. Treatment lasted 12 weeks, with 4 weeks pre- and post-baseline periods. A time-series multivariate regression analysis was done to control for outside factors influencing psoriasis symptoms. The final analysis reported a significant improvement in psoriasis symptom score done by physicians between the meditation group as compared to the control group (partial $r = 0.30$, $p < 0.01$) [7]. No additional significant impact was associated with the use of the imagery combined with meditation as compared to meditation alone (partial $r = 0.06$, $p < 0.05$) [7]. Two subjects each from the meditation group and meditation with imagery group clinically improved their psoriasis symptoms. No subjects of any cohort reported worsening symptoms during the study [7].

In 1998, Kabat-Zinn et al. investigated the effect of mindfulness-based stress reduction on the rate of skin clearing in patients with moderate-to-severe psoriasis who were undergoing phototherapy (UVB) and photochemotherapy (PUVA). This RCT consisted of two cohorts: guided meditation audio tapes that instructed calm breathing techniques during phototherapy and phototherapy TAU [8]. This study took place over 40 phototherapy visits, approximately 13 weeks in total [8]. The guided meditation tapes included instructions to visualize UV light slowing down the growth and division

Table 1 Summary of studies examining the effect of meditation and/or mindfulness interventions on physical results (psoriasis severity) and psychological results

Study title	Author	Year	Intervention	Study design	Sample	Control	Follow-up period	Physical results	Psychological results	Attrition rate, % (*n*)	CASP quality rating
A pilot study examining mindfulness-based cognitive therapy in psoriasis [6]	Fordham et al.	2015	MBCT once weekly for 8 weeks	RCT	$N = 29$, mixed severities	Conventional therapy (topical, systemic, and/or biologic)	Not reported	Significantly reduced disease severity (saPASI, $p = 0.05$) and improved QoL (DLQI = 0.02) in study group	No significant difference in perceived stress (PSS) or distress (HADS) between groups	34.50% (6)	9/11
Psychological stress and psoriasis: experimental and prospective correlational studies [7]	Gaston et al.	1991	Meditation alone or with imagery, 12 weeks	RCT	$N = 24$, scalp PS rated ≥ 10 out of 20 on severity scale	No treatment	Week 12 to 24	Both intervention arms: 4 of 9 treated pts with disease severity improvement; no patients worsened	No change in psychometric (SCL-90-R) or anxiety level (STAI) between pre-intervention and post-intervention in study and control groups	37.80% (14)	9/11
Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate-to-severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA) [8]	Kabat-Zinn et al.	1998	Guided meditation audiotapes during phototherapy sessions	RCT	$N = 37$, moderate-to-severe plaque psoriasis	UVB alone or PUVA alone	40 phototherapy sessions; approx. 13 weeks	Compared with control group, the study group reached halfway and clearing points significantly faster ($p = 0.01$ and 0.03, respectively)	No change in psychological assessment score (SCL-90-R) or anxiety level (STAI) between pre- and post-intervention in control or experimental groups	Not reported	8/11

Table 1 continued

Study title	Author	Year	Intervention	Study design	Sample	Control	Follow-up period	Physical results	Psychological results	Attrition rate, % (*n*)	CASP quality rating
Mindfulness-based interventions for psoriasis: a randomized controlled trial [9]	D'Alton et al.	2018	TAU combined with MBCT, MBSCT, or MBSCT-SH, and audio-guided meditations	RCT	*N* = 94, moderate-to-severe plaque psoriasis	TAU	8 weeks	Not statistically significant differences were found on psoriasis symptom burden compared to TAU alone at post-treatment, 6- or 12-month follow-up	Non-statistically significant differences were found on psychological well-being, or quality of life relative to TAU alone at post-treatment, 6- or 12-month follow-up	Not provided	8/11
Effectiveness of mind–body intervention for inflammatory conditions: results from a 26-week randomized, non-blinded, parallel-group trial [10]	Nguyen et al.	2021	MBI	RCT	*N* = 35, moderate-to-severe plaque psoriasis	TAU	12 weeks, 26 weeks	Significantly reduced disease severity (saPASI, $p = 0.05$) in study group	Significantly reduced QoL impairment (DLQI, $p = 0.02$) in study group	Not provided	9/11
A randomized trial of mindfulness-based cognitive therapy with psoriasis patients [3]	Maddock et al.	2019	MBCT in addition to TAU in a 1:1 ratio	RCT	*N* = 101, moderate-to-severe plaque psoriasis	TAU	8 weeks	MBCT group reported a large significant reduction of saPASI scores from t1 to t2 in the MBCT group (M difference = 3.20 (95% CI = 0.81, 5.59), $p = 0.01$) but not in the TAU group (M difference = 1.89 (95% CI = − 0.12, 3.89), $p = 0.07$)	Not studied	Not provided	9/11

Table 1 continued

Study title	Author	Year	Intervention	Study design	Sample	Control	Follow-up period	Physical results	Psychological results	Attrition rate, % (*n*)	CASP quality rating
A controlled trial of mindfulness-based stress reduction in psoriasis and investigation of telomerase as a biomarker of psychological distress [11]	Adamzik et al.	2013	MBSR compared with TAU Also assessed the role of serum telomerase as a possible biomarker of psychological distress	Non-randomized control trial	*N* = 36; moderate-to-severe plaque psoriasis	TAU	8 weekly sessions of 1.5 h duration	No significant changes in the control group. There was no significant change in Psoriasis Area and Severity Index	MBSR group had significantly lower levels of depression ($p = 0.01$), anxiety ($p = 0.01$) and worry ($p = 0.01$), with no significant changes in the control group. Levels of self-compassion improved significantly in the MBSR group compared with controls ($p = 0.02$). Serum levels of telomerase correlated with self-compassion ($p = 0.01$) and increased significantly in patients who underwent MBSR ($p = 0.04$), with no significant change in the control group. MBSR is effective in improving depression, anxiety, worry and self-compassion, which are significant comorbidities in psoriasis	Not provided	8/11

Table 1 continued

Study title	Author	Year	Intervention	Study design	Sample	Control	Follow-up period	Physical results	Psychological results	Attrition rate, % (*n*)	CASP quality rating
Getting under the skin: report from the International Psoriasis Council Workshop on the Role of Stress in Psoriasis [12]	Loite et al.	2013	Two 4-mm punch biopsies from both involved and non-involved skin were obtained from each patient with psoriasis. One 4 mm skin biopsy was obtained from healthy controls. extraction	Case–control	Psoriasis $N = 20$, control = 56	Skin from non-psoriatic patients	Not applicable	Statistically significant increases in the expression of CRHR1 mRNA in lesional ($p < 0.01$) and non-lesional ($p < 0.01$) psoriatic skin compared with healthy controls	Not studied	Not provided	9/11

Study quality was assessed using the Critical Appraisal Skills Programme (CASP) Checklists for randomized clinical trials, non-randomized clinical trials, and case–control studies [13]. Scores were determined based on the number of questions on each checklist which were answered "Yes" per number of questions on each checklist for each question answered "Yes," "No," or "Can't Tell"

Abbreviations: *MBCT* mindfulness-based cognitive therapy, *MBSCT* mindfulness-based self-compassion therapy, *MBSCT-SH* mindfulness-based self-compassion therapy with self-help, *MBI* mind–body intervention, *MBSR* mindfulness-based stress reduction, *QoL* quality of life, *DLQI* Dermatology Life Quality Index, *PSS* Perceived Stress Score, *HADS* Hospital Anxiety and Depression Scale, *SCL-90-R* Symptom Checklist-90-Revised, *STAI* State-Trait Anxiety Inventory, *CRHR1* corticotropin-releasing hormone receptor 1

of skin cells. The second cohort proceeded with TAU. The MBSR cohort reached the halfway point (PASI-50) and clearing point (PASI-100) significantly faster than the TAU group ($p = 0.01$, $p = 0.03$, respectively) [8].

Fordham et al. performed a randomized control trial in 2015 investigating MBCT in patients with moderate-to-severe plaque psoriasis. This pilot study consisted of 29 patients who were randomized to either 8 weeks of MBCT or TAU [6]. The results of this study showed that there was a significantly reduced disease severity (saPASI) and improved quality of life as measured through the dermatology life quality index (DLQI) in the MBCT group compared to TAU ($p = 0.05$, $p = 0.02$, respectively) [6]. However, there was no significant difference in patient-perceived stress or distress scores [6].

D'Alton et al. conducted a randomized control trial in 2018 with a larger study group of 94 psoriasis patients. The interventions consisted of (1) TAU with MBCT, (2) TAU with MBSCT, (3) MCSCT-SH, or TAU with systemic medication [14]. The treatment consisted of eight weekly 2-h group sessions by two psychologists trained in mindfulness-based interventions and MBCT. More specifically, each mindfulness-based session involved breathing exercises, emotional disclosure, and participants also taught peers about mindfulness training techniques. In addition, participants were given audio-guided meditations and supporting materials from which the MBCT program was based to facilitate daily mindfulness practice [14]. Interestingly, patients who participated in the mindfulness-based interventions reported that these exercises were helpful; however no statistically significant difference was found on physical psoriasis symptoms nor psychological well-being compared to the TAU group after eight weekly sessions [14]. Additionally, no statistically significant differences were found between study groups at both the 6- and 12-month follow-up visits [14].

In 2019, Maddock et al. performed an RCT of MBCT that consisted of 101 participants who were randomized to either 8 weeks of MBCT in addition to their usual psoriasis treatment or to TAU without the implementation of guided mindfulness [3]. The results of this study indicated a significant decrease in saPASI results completion of the 8 weeks of mindfulness training (time period one, t_1) [3]. However, there was no significant difference in saPASI after participants stopped MBCT and were reassessed at 12 weeks (time period 2, t_2) after beginning the study, 4 weeks after terminating MBCT [3].

Most recently, Nguyen et al. conducted a small, randomized control trial in 2021 consisting of 35 patients with either psoriasis ($n = 20$) or rheumatoid arthritis ($n = 15$) [10]. This study compared the effect of a mind–body intervention (MBI), relative to TAU on the World Health Organization-Five Well-Being Index (WHO-5) during a period of 12 weeks of intensive MBI training and follow-up at week 26 among patients with either psoriasis or rheumatoid arthritis (RA) [10]. The study did not separate the results for patients with psoriasis from patients with RA and did not report PASI scoring in psoriasis patients. This study randomized 17 participants to the MBI group and 18 participants to the TAU group. The attrition rate for the MBI group was 19% [10]. In total, 65% of subjects in the MBI group and 71% of TAU patients completed the outcome assessments. After 12 weeks, a statistically significant improvement in WHO-5 was observed between the groups ($p = 0.02$) [10]. However, during the entire study, the average WHO-5 score was higher (improved) although not statistically significant in the MBI group (65.30) compared with the TAU group (59.10). This corresponded to an average difference in WHO-5 scoring of 6.15 over 26 weeks (95% CI − 0.26 to 12.56; $p = 0.06$) [10].

Adamzik et al. performed a non-randomized control trial in 2013 investigating the effect of MBSR on the emotional and physical symptoms of psoriasis [11]. In addition, telomerase was used as a biomarker for psychological distress. Specifically, 36 patients with moderate-to-severe psoriasis were assigned to one of two cohorts. The first cohort of 19 patients completed eight weekly 1.5-h sessions of MBSR in addition to their current psoriasis management. The second cohort of 17 patients were assigned to TAU. The results of this study indicated that participants who completed the eight weekly sessions of

MBSR had significantly lower anxiety, depression, and worry [11]. There was no significant improvement in these measurements in the control group. However, this study found no significant change in the physical symptoms of psoriasis as measured by the psoriasis area and severity index (PASI) [11]. Serum levels of telomerase increased significantly in participants who completed the course of MBSR [11].

Loite et al. performed a case–control study in 2012 to determine the role of the corticotropin-releasing hormone (CRH) proopiomelanocortin (POMC) system in patients diagnosed with psoriasis [12]. It is well known and researched that cortisol is released after activation of CRH from the hypothalamus during times of stress. Investigators in this study performed two 4-mm punch biopsies from lesional and non-lesional skin from each patient with psoriasis ($n = 20$) [12]. The biopsies were then compared to biopsies from a cohort of healthy controls ($n = 56$) that were matched by skin tone; all participants had either Fitzpatrick type II or type III skin classification [12]. The results revealed up-regulation of POMC mRNA and down-regulation of CRH/CRH-1 expression in psoriasis lesional and non-lesional skin compared with that of healthy controls [12].

DISCUSSION

Mindfulness and meditation practices have shown promising evidence in improving other chronic inflammatory skin conditions such as atopic dermatitis. The first randomized controlled trial comparing the effects of non-pharmaceutical interventions as adjunct therapy to TAU for atopic dermatitis was performed in Germany in 2017 by Heratizadeh et al. [15]. This multi-center study randomized patients with moderate-to-severe atopic dermatitis (AD) to either a 12-h outpatient educational training program lead by a multi-professional team that included psychologists, psychiatrists, and other trained professionals or a control group [15]. This study reported a significant decrease in ''catastrophizing cognitions'' with respect to itching as measured by the Juckreiz-Kognitions-Fragebogen questionnaire, a significant decrease in "social anxiety" measured by the Marburger Hautfragebogen questionnaire, a significant improvement in subjective disease burden (Skindex-29 questionnaire), and a significant improvement in overall disease severity (skin signs and symptoms) measured by the SCORing Atopic Dermatitis Index in the intervention group compared with the control group from baseline to 1-year follow-up [15].

The present review on meditation and mindfulness for psoriasis highlights promising evidence that meditation and mindfulness-based therapies can improve psoriasis area and severity index. Five of six RCTs reported improvement in saPASI. A significant improvement in saPASI after either 8 or 12 weeks of mindfulness and/or meditation was reported in four RCTs; PASI-50 and clearing points were reached significantly faster than the control in one RCT. In 2019, Maddock et al. conducted an RCT with the highest power and a sample size of 101 participants. This study reported a decreased in saPASI scoring [3].

However, only two studies reported significant improvement in quality of life (Nguyen et al. and Adamzik et al.) [10, 11]. Nguyen et al. reported significantly reduced quality of life (QoL) impairment as compared to the TAU group. This study is the only RCT to date that reports significant improvement in both PASI and QoL after MBI therapy as compared to control [10]. The results of this study suggest that implementing mind–body interventional therapy can improve both quality of life and psoriasis severity after 12 weeks of MBI. However, this study design and methodology have yet to be replicated; thus, more RCTs studying the effect of MBI on PASI and QoL should be conducted in the future.

The non-randomized clinical trial performed by Adamzik et al. reported significantly lower levels of anxiety, worry, and depression in the MBSR study group as compared to healthy controls. In addition, this study reported significantly improved levels of self-compassion compared to the control group [11]. Subjects also had significantly increased serum telomerase after completing 8, 1.5-h sessions of weekly MBSR [11]. This study reported no significant change in PASI scoring. However, these

results are promising as depression, anxiety, and worry are significant comorbidities in psoriasis [11]. Future RCTs should be performed regarding non-pharmaceutical therapies for moderate-to-severe plaque psoriasis psychological comorbidities.

The studies reviewed had several limitations. To date, only six RCTs with relatively short follow-up (up to 12 weeks) have been performed. Four of the six RCTs were limited by small sample sizes with less than 50 participants. There was significant heterogeneity in methodologies between studies, with interventions ranging from MBCT, meditation alone or with imagery, guided meditation with audiotapes, MBSCT, MCSCT-SH, MBI, and MBSR. The studies in this review demonstrated relatively high attrition rates. This could be due to the study design, method of mindfulness-based practice, or simply lack of patient adherence. Future studies should consider implementing more pragmatic or real-world mindfulness-based practices. For example, one study design required a mindfulness session of 1.5 h weekly [11]. It is possible that participating in shorter-length sessions with higher frequency could be more feasible for patients.

CONCLUSIONS

Meditation and mindfulness could play a useful role as adjunct therapy for those suffering from the physical effects and associated psychological symptoms of psoriasis. Five of six RCTs reported improvement in saPASI scoring after their respective meditation or mindfulness interventions. Overall, these results potentially suggest that meditation can be used as a tool to improve both psoriasis severity and quality of life in the short term (Table 1), though more high-quality research studies are needed.

ACKNOWLEDGEMENTS

Funding. No funding or sponsorship was received for this study or publication of this article.

Author Contributions. Erin Bartholomew: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation. Mimi Chung: draft manuscript preparation. Samuel Yeroushalmi: draft manuscript preparation. Marwa Hakimi: draft manuscript preparation. Tina Bhutani: draft manuscript preparation. Wilson Liao: study conception and design and draft manuscript preparation.

Disclosures. Dr. Wilson Liao, MD has received funding from AbbVie, Amgen, Janssen, Leo, Novartis, Pfizer, Regeneron, and TRex Bio. Tina Bhutani is a principal investigator for trials sponsored by AbbVie, Castle, CorEvitas, Dermavant, Galderma, Mindera, and Pfizer. She has received research grant funding from Novartis and Regeneron. She has been an advisor for AbbVie, Arcutis, Boehringer Dermatol Ther (Heidelb) Ingelheim, Bristol Myers Squibb, Janssen, Leo, Lilly, Novartis, Pfizer, Sun, and UCB. Erin Bartholomew, Mimi Chung, Samuel Yeroushalmi, and Marwa Hakimi declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Compliance with Ethics Guidelines. This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

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