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Home- vs Office-Based Narrowband UV-B Phototherapy for Patients With Psoriasis
The LITE Randomized Clinical Trial

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IMPORTANCE Office-based phototherapy is cost-effective for psoriasis but difficult to access. Home-based phototherapy is patient preferred but has limited clinical data, particularly in patients with darker skin.

OBJECTIVE To compare the effectiveness of home- vs office-based narrowband UV-B phototherapy for psoriasis.

DESIGN, SETTING, AND PARTICIPANTS The Light Treatment Effectiveness study was an investigator-initiated, pragmatic, open-label, parallel-group, multicenter, noninferiority randomized clinical trial embedded in routine care at 42 academic and private clinical dermatology practices in the US. Enrollment occurred from March 1, 2019, to December 4, 2023, with follow-up through June 2024. Participants were 12 years and older with plaque or guttate psoriasis who were candidates for home- and office-based phototherapy.

INTERVENTIONS Participants were randomized to receive a home narrowband UV-B machine with guided mode dosimetry or routine care with office-based narrowband UV-B for 12 weeks, followed by an additional 12-week observation period.

MAIN OUTCOMES AND MEASURES The coprimary effectiveness outcomes were Physician Global Assessment (PGA) dichotomized as clear/almost clear skin (score of ≤1) at the end of the intervention period and Dermatology Life Quality Index (DLQI) score of 5 or lower (no to small effect on quality of life) at week 12.

RESULTS Of 783 patients enrolled (mean [SD] age, 48.0 [15.5] years; 376 [48.0%] male), 393 received home-based phototherapy and 390 received office-based phototherapy, with 350 (44.7%) having skin phototype (SPT) I/II, 350 (44.7%) having SPT III/IV, and 83 (10.6%) having SPT V/VI. A total of 93 patients (11.9%) were receiving systemic treatment. At baseline, mean (SD) PGA was 2.7 (0.8) and DLQI was 12.2 (7.2). At week 12, 129 patients (32.8%) receiving home-based phototherapy and 100 patients (25.6%) receiving office-based phototherapy achieved clear/almost clear skin, and 206 (52.4%) and 131 (33.6%) achieved DLQI of 5 or lower, respectively. Home-based phototherapy was noninferior to office-based phototherapy for PGA and DLQI in the overall population and across all SPTs. Home-based phototherapy, compared to office-based phototherapy, was associated with better treatment adherence (202 patients [51.4%] vs 62 patients [15.9%]; $P < .001$), lower burden of indirect costs to patients, and more episodes of persistent erythema (466 of 7957 treatments [5.9%] vs 46 of 3934 treatments [1.2%]; $P < .001$). Both treatments were well tolerated with no discontinuations due to adverse events.

CONCLUSIONS AND RELEVANCE In this randomized clinical trial, home-based phototherapy was as effective as office-based phototherapy for plaque or guttate psoriasis in everyday clinical practice and had less burden to patients.

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Visual Abstract

Multimedia

Supplemental content

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Psoriasis is a common, chronic, inflammatory skin disease associated with psoriatic arthritis, premature atherosclerosis, metabolic disorders, and health-related quality of life (HRQOL) impairment.[1-5] Patients with psoriasis have an increased risk of mortality, primarily from excess major cardiovascular events, culminating in a 5-year decrease in life expectancy for those with moderate to severe disease.[6-8] In the past 2 decades, there have been dramatic advances in psoriasis treatment with the advent of immune-targeted topical, oral, and injectable biologic therapies.[9] Despite these advances, patients struggle to obtain or maintain therapeutic control due to only partial effectiveness, loss of effect over time, discontinuation due to adverse effects like infection, poor adherence, or a multitude of access and cost issues.[10-13] Moreover, many patients with psoriasis prefer nonpharmaceutical approaches.[14]

Narrowband 311 nanometer UV-B phototherapy has been a standard psoriasis treatment for decades.[15] It is often preferred due to a lack of systemic adverse effects and does not appear to increase skin cancer risk.[16-18] Clinical trials of office-based narrowband UV-B have demonstrated similar clinical responses to the biologic adalimumab but with better responses on measures of HRQOL, a lower risk of adverse events (particularly infection) compared to secukinumab, and improvement in systemic inflammatory (ie, reduction in C-reactive protein and interleukin 6) and lipid markers (improvement in high-density lipoprotein particle levels) relevant to cardiovascular disease compared to placebo.[16,19,20] Moreover, in the US, office-based phototherapy is 10 to 100 times less expensive per response than biologics for psoriasis.[21] Cost-effectiveness is increasingly important as US pharmaceutical expenditures for psoriasis rise dramatically, including to more than $27 billion in 2023.[22]

The safety, efficacy, and health care system cost advantages of office-based phototherapy are offset by its inconvenience (patients need to receive treatments 2-3 times per week for about 12 weeks for initial clearance, often followed by treatment at a reduced frequency to maintain results), relatively high direct (ie, co-payments) and indirect (ie, travel, time off from work) costs to patients, and uneven geographic availability.[23] Home-based phototherapy uses similar light sources as office-based phototherapy and overcomes many of the limitations of office-based treatment. However, limited data on home-based phototherapy effectiveness in diverse populations have contributed to poor insurance coverage and health care professionals being uncertain about prescribing it.[15] To address this evidence gap, we conducted a randomized pragmatic trial of home- vs office-based phototherapy embedded in routine care of patients with psoriasis.

Key Points

Question Is narrowband UV-B phototherapy for the treatment of plaque or guttate psoriasis at home noninferior to office-based phototherapy according to outcomes that matter to patients, physicians, and payers?

Findings In this randomized clinical trial of 783 patients with plaque or guttate psoriasis, home-based phototherapy was noninferior to office-based phototherapy across all skin tones for physician- and patient-reported outcomes and was associated with a lower burden of indirect costs to patients.

Meaning Home-based phototherapy is as effective as office-based phototherapy for psoriasis in everyday clinical practice and has less burden to patients.

Methods

Trial Design

The Light Treatment Effectiveness (LITE) study was an investigator-initiated, pragmatic, open-label, parallel-group, multicenter, noninferiority randomized clinical trial. Pragmatic trials are designed to determine how well interventions work under everyday conditions and, thus, reflect clinical practice.[24] LITE was designed and executed with patients and stakeholders (the National Psoriasis Foundation, payers, and experts) from inception through dissemination.

The institutional review board of the University of Pennsylvania oversaw the conduct of the trial, approved the protocol, and was the institutional review board of record for all sites. The study was conducted according to the Declaration of Helsinki and Good Clinical Practice guidelines. Written informed consent was obtained from each participant or their parent/guardian. This study followed the Consolidated Standards of Reporting Trials (CONSORT) reporting guidelines.

Participants

Patients from 42 academic and private dermatology practices in the US were recruited during routine care between March 1, 2019, and December 4, 2023. Patients were eligible if they were 12 years or older with plaque or guttate psoriasis, considered a candidate for phototherapy, and deemed willing and able to comply with either in-office or in-home phototherapy. Patients previously unresponsive to phototherapy, who received phototherapy within 14 days of the baseline visit, or who were deemed medically unsuitable for phototherapy were excluded. There were no washouts or prohibited therapies. Race and ethnicity were self-reported by patients.

Interventions and Follow-Up

Patients randomized to office-based phototherapy received treatment based on local standard of care. Sites were encouraged, but not mandated, to use current guidelines for dosing phototherapy (see the study protocol in Supplement 1).[15] The initial dose was based on skin phototype (SPT; I/II, fair skin that burns easily and tans poorly; III/IV, darker white to light brown skin that tans easily and occasionally burns; and V/VI, brown or black skin that tans deeply and rarely burns) and was increased based on response to, and time since, the last dose. Patients randomized to home-based phototherapy received a Daavlin 7 series 8-bulb narrowband UV-B unit with guided mode dosimetry. The home phototherapy device uses the same protocol as American Academy of Dermatology/National Psoriasis Foundation psoriasis guidelines and can be customized

by the prescribing clinician.[15] Similar to office treatment, the patient needs to answer a question on the home phototherapy controller about degree and duration of redness that occurred with the previous treatment. The device then delivers the appropriate protocol-defined dose. The device limits the frequency and number of treatments a patient can receive, thereby preventing misuse. During the screening period, patients provided consent, and insurance authorization for office-based phototherapy was obtained. Patients then reconfirmed willingness to be randomized based on their potential costs. The intervention period started on the date of the first treatment (or 14 days after randomization, whichever came first) and continued for 12 weeks (eFigure 1 in Supplement 2). Clinical assessments occurred at baseline and either at the end of treatment or the week 12 visit, whichever occurred first. The observation period started 12 weeks after the first treatment (or 14 weeks after randomization, whichever occurred first) and continued for an additional 12 weeks.

Outcomes

The coprimary effectiveness outcomes were Physician Global Assessment (PGA) dichotomized as clear/almost clear skin (score of ≤1) at the end of the intervention period and Dermatology Life Quality Index (DLQI) score of 5 or lower (no to small effect on quality of life) at week 12.[25,26] Patient-reported outcomes were captured via an app (Medable) using patients' cell phones with automated text reminders. Patients were compensated $20 per survey. The primary safety outcome was the proportion of patients reporting treatment-emergent adverse events, such as the amount of persistent erythema (eg, sunburn), which were documented prior to each in-office phototherapy treatment by clinic staff or via the home phototherapy machine's user interface. Patients were queried about any serious adverse events by the sites at the follow-up appointment (week 12) and could report serious adverse events at any point. Secondary outcomes are described in the eMethods in Supplement 2. We used the product of body surface area (BSA) × PGA to approximate the psoriasis area and severity index, as the latter is not measured in clinical practice but is often used in efficacy trials.[27]

Randomization and Blinding

Patients were randomized using block randomization, stratified on clinic and SPT. Data analysts were blinded to group assignment. Patients and clinicians were not blinded.

Statistical Analysis

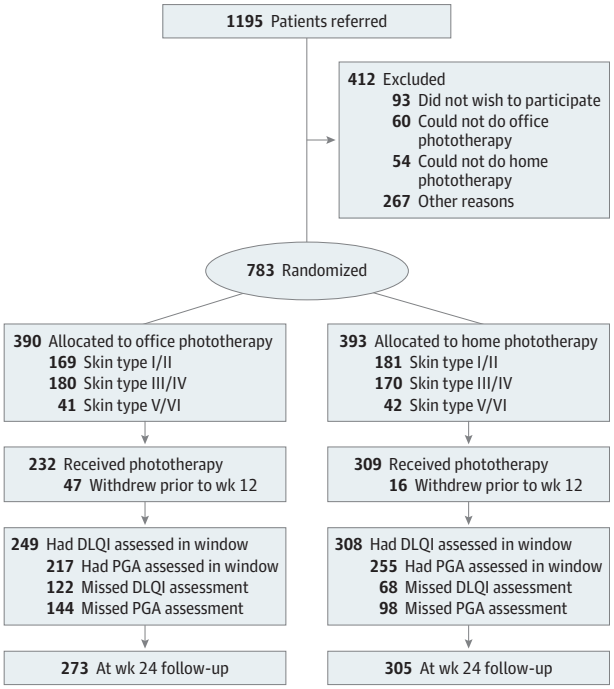
This study was powered to determine noninferiority of home-based phototherapy within SPT strata. We prespecified 2 primary effectiveness outcomes. Sample size was determined based on a 1-sided α level of 2.5%, a 50% response rate, and 80% power to establish noninferiority with a margin of 15% (determined by meta-analyses and stakeholder input) within each SPT stratum.[28-31] This yielded a sample size of 350 per stratum. We did not explicitly account for multiple comparisons since the patient- and physician-reported measures assess the same outcome and are highly correlated.

All analyses were performed using Stata, version 18.0 (StataCorp), by R.C.F and D.B.S. We hypothesized that effectiveness of home-based UV-B phototherapy would be noninferior to office-based phototherapy for both primary effectiveness outcomes and across all SPTs. Primary analyses were based on the intent-to-treat population of randomized individuals. Patients with missing PGA or DLQI data were classified as experiencing treatment failure (ie, nonresponse imputation that assumed a PGA score of >1 and/or DLQI >5). Home-based phototherapy was deemed noninferior to office-based phototherapy if the lower bound of the SPT-adjusted 2-sided 95% CI for the response difference was greater than the prespecified noninferiority margin of 15% (detailed in the eMethods in Supplement 2). Given the potential for heterogeneity of treatment effect, separate analyses were planned a priori for each SPT. Secondary outcomes and exploratory analyses were analyzed and reported using response differences with 95% CIs and *P* values that were not adjusted for multiple comparisons and should be interpreted as exploratory and hypothesis generating. A 2-sided $P < .05$ was considered statistically significant for secondary outcomes. Binary and continuous outcomes were analyzed using logistic and linear regression, respectively, adjusted for SPT.

Results

Dermatology practitioners determined that 1174 patients were appropriate for phototherapy at home or in the office, of whom 783 patients agreed to participate (**Figure**). The most common reasons for nonparticipation were not wanting to participate (n = 93); not being able to do office-based phototherapy due to inconvenience, co-payments, or lack of insurance coverage (n = 60); and not being able to do home-based phototherapy due to not having adequate space or concerns about operating the machine (n = 54). Baseline characteristics were similar in both groups (**Table 1**). The mean (SD) age among patients was 48.0 (15.5) years; 376 (48.0%) were male; and 350 (44.7%) had SPT I/II, 350 (44.7%) had SPT III/IV, and 83 (10.6%) had SPT V/VI. Due to recruitment challenges, which coincided with the COVID-19 pandemic, enrollment among those with SPT V/VI was halted when enrollment was completed in the other strata. Patients lived a median (IQR) of 20 (9-40) miles from the dermatology office, and their co-payment for office-based phototherapy was a mean (SD) of $17.50 ($30.40) per treatment. Patients randomized to home-based phototherapy started treatment on average 8 days later than those randomized to in-office phototherapy. The most common comorbidities were cardiometabolic disease among 454 patients (58.0%), psoriatic arthritis among 133 (17.0%), and mood disorder or anxiety among 112 (14.3%). Patients had psoriasis for a mean (SD) of 15.8 (14.8) years, 312 (39.9%) previously received biologic or nonbiologic systemic therapy (93 patients [11.9%] were currently using these treatments), and 337 (43.0%) had previously been treated with phototherapy. Patients had moderate to severe disease (mean [SD] PGA of 2.7 [0.8] and BSA of 12.5% [15.7%]), with a large effect on HRQOL (mean [SD] DLQI of 12.2 [7.2]).[26]

Figure. Participant Flowchart



DLQI indicates Dermatology Life Quality Index; PGA, Physician Global Assessment.

More patients achieved clear/almost clear skin or no to small effect on HRQOL in the home group (129 of 393 [32.8%] and 206 of 393 [52.4%], respectively) compared to the office group (100 of 390 [25.6%] and 131 of 390 [33.6%], respectively) (**Table 2** and eTable 1 in Supplement 2). Home-based phototherapy was noninferior to office-based phototherapy for both physician and patient-reported outcomes in the overall population and across all SPTs. Among those who achieved a DLQI score of 5 or lower at week 12, patients in both groups maintained this degree of HRQOL response for approximately 75 days of the possible 84 days of follow-up after phototherapy ended (**Table 3**).

Patients undergoing home phototherapy were also more likely to achieve DLQI of 0/1 (no effect on HRQOL), a minimally clinically important difference in DLQI (difference, 12.0 [95% CI, 6.5-17.4] percentage points [pp]; $P < .001$), and a 75% and 90% reduction in BSA × PGA (difference, 11.5 [95% CI, 5.2-17.9] pp; $P < .001$; and 8.2 [95% CI, 2.5-13.9] pp; $P = .005$, respectively; Table 3). Patients undergoing home phototherapy used topical treatments less frequently (0.8 [95% CI, 0.4-1.3] days fewer per week; $P = .001$) and were less likely to start oral or biologic treatments during the 12-week treatment period (difference, −2.6 [95% CI, −5.9 to 0.7] pp; $P = .12$). Patients undergoing home phototherapy spent slightly less time on treatments compared to the office group (−3.2 [95% CI, −1.0 to 0.6] minutes per treatment; $P = .09$). However, patients undergoing treatment in an office spent a mean (SD) of 50.3 (46.7) minutes traveling to and from each treatment with patient-reported travel costs of approximately $20 per treatment (eg, an estimated $720 for a 12-week treatment course).

Compared to patients treated in office, patients assigned to home-based phototherapy were more likely to have a starting dose consistent with current guidelines, received a mean (SD) of 8.9 (0.9) more treatments, were 3.2 times more likely to receive at least 24 treatments (ie, on average at least 2 treatments a week, which is a marker of good adherence),[15] had a higher cumulative dose of narrowband UV-B, and had a higher rate of persistent erythema per treatment (**Table 4**). In 35 of 56 treatments (62.5%) associated with persistent erythema in which a coincident DLQI score was obtained, patients reported "no" or only "a little itchy, sore, painful, or stinging skin." Phototherapy was well tolerated by both groups, with no treatment discontinuations due to phototherapy adverse effects. There was a low rate of serious adverse events in the office-based group (4 events in 4 patients [1.0%]: breast cancer, osteosarcoma, chest pain, and infected wounds) and in the home-based group (5 events in 3 patients [0.8%]: substance misuse, neuropathy/mild malnutrition, and COVID-19/hypertension resulting in death), none of which were deemed treatment related.

Sensitivity analyses (eFigures 2-4 and eTable 2 in Supplement 2) evaluating varying approaches to missing data, evaluating varying adherence to treatment, evaluating center effects, and restricting to patients with no prior phototherapy experience yielded similar results to the primary analysis. However, statistical significance for noninferiority of PGA of clear/almost clear was not demonstrated in those who received at least 24 treatments due to very few patients assigned to office-based treatment achieving this degree of adherence (eTable 2 in Supplement 2).

Discussion

The LITE study provides compelling evidence that home-based phototherapy is noninferior to office-based phototherapy for the treatment of plaque and guttate psoriasis across both physician- and patient-reported end points. Importantly, we evaluated a priori for heterogeneity of treatment effect, as the outcomes could be affected by patients with fair skin not tolerating home-based treatment as well (given less ability to fine-tune dosing) and patients with darker skin having poorer response (due to home machines having lower output and, thus, longer treatment times) and found strong evidence of noninferiority across all SPTs. Indeed, the benefits of home-based treatment relative to office-based treatment were strongest in patients with SPT V/VI, particularly for physician-reported measures, resulting in robust conclusions in this group despite relatively lower enrollment. These results extend a smaller pragmatic trial of home- vs office-based phototherapy for psoriasis conducted in the Netherlands prior to the modern biologic era, which also demonstrated noninferiority.[32]

The LITE study entry criteria reflected routine dermatology clinical practice in the US. The patient population was more balanced for sex and more diverse than is typical of psoriasis efficacy trials of systemic agents.[33] The patient population had long-standing, objectively, and subjectively moderate to se-

Table 1. Demographics and Background Characteristics

Characteristic	No. (%)		
	Office-based phototherapy (n = 390)	Home-based phototherapy (n = 393)	Total (N = 783)
Age, mean (SD), y	47.8 (15.1)	48.2 (15.9)	48.0 (15.5)
Sex			
Female	200 (51.3)	207 (52.7)	407 (52.0)
Male	190 (48.7)	186 (47.3)	376 (48.0)
Race[a]			
Asian	31 (8.0)	25 (6.4)	56 (7.2)
Black	34 (8.7)	39 (9.9)	73 (9.3)
White	292 (74.9)	296 (75.3)	588 (75.1)
Other	33 (8.5)	33 (8.4)	66 (8.4)
Ethnicity[a]			
Hispanic	54 (13.9)	48 (12.2)	102 (13.0)
Unknown or missing	8 (2.1)	11 (2.8)	19 (2.4)
Skin phototype			
I/II	169 (43.3)	181 (46.1)	350 (44.7)
III/IV	180 (46.2)	170 (43.3)	350 (44.7)
V/VI	41 (10.5)	42 (10.7)	83 (10.6)
Miles from dermatology office, median (IQR)	19 (8-40)	20 (10-40)	20 (9-40)
Co-payment for office-based phototherapy, mean (SD), $	17.50 (30.50)	17.50 (30.40)	17.50 (30.40)
Days between screening to randomization, mean (SD)	9.2 (22.4)	10.1 (35.0)	9.6 (29.4)
Days between randomization and start of phototherapy, mean (SD)	11.4 (18.1)	19.8 (16.1)	16.2 (17.5)
BMI, mean (SD)	29.9 (7.6)	29.3 (6.8)	29.6 (7.2)
Comorbidities			
Cardiometabolic disease[b]	221 (56.7)	233 (59.3)	454 (58.0)
Psoriatic arthritis	65 (16.7)	68 (17.3)	133 (17.0)
Mood disorder or anxiety	58 (14.9)	54 (13.7)	112 (14.3)
Internal malignant tumor	27 (6.9)	21 (5.3)	48 (6.1)
Skin cancer	4 (1.0)	7 (1.8)	11 (1.4)
Baseline DLQI, mean (SD)	12.3 (7.2)	12.1 (7.3)	12.2 (7.2)
Baseline PGA, mean (SD)	2.7 (0.8)	2.7 (0.8)	2.7 (0.8)
Baseline BSA, mean (SD), %	12.4 (15.3)	12.6 (16.1)	12.5 (15.7)
Age at psoriasis diagnosis, mean (SD), y	32.4 (17.5)	32.0 (18.8)	32.2 (18.2)
Psoriasis duration, mean (SD), y	15.4 (14.6)	16.2 (15.0)	15.8 (14.8)
Treatment history			
Biologics or nonbiological systemic therapy	155 (39.7)	157 (40.0)	312 (39.9)
Phototherapy	165 (42.3)	172 (43.8)	337 (43.0)
Current treatment with biologics or nonbiological systemic therapy	49 (12.6)	44 (11.2)	93 (11.9)

Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); BSA, body surface area; DLQI, Dermatology Life Quality Index; PGA, Physician Global Assessment.

[a] Race and ethnicity were self-reported by patients. The other race category includes American Indian or Alaska Native, Native Hawaiian or Pacific Islander, and unknown or missing data; this category was grouped together owing to small sample sizes.

[b] Defined as history of cardiovascular disease, hypertension, diabetes, hyperlipidemia, or BMI of 30 or higher. Among all included patients, 52 (6.6%), 83 (10.6%), 187 (23.9%), and 113 (14.4%) had a history of cardiovascular disease, diabetes, hypertension, and hyperlipidemia, respectively, and 1 patient (0.3%) in the home-based phototherapy group was pregnant.

vere disease and a high prevalence of prior oral and biologic treatment, and 11.9% of patients were currently taking systemic psoriasis treatments, suggesting that this was a population with recalcitrant psoriatic disease. Nevertheless, clinical responses in the overall population were favorable, and among those who were adherent to phototherapy, about 50% achieved clear or almost clear skin, which is a high bar for effectiveness.[34] Collectively, these findings demonstrate the continued importance of phototherapy despite recent therapeutic advances.

LITE was designed as a noninferiority study, but the results suggest that patients achieved better outcomes when randomized to home-based phototherapy compared to office-based treatment. These observed differences are likely

Table 2. Coprimary End Points and Response Rates at Week 12

End point	Skin phototype	No. (%)		ARD (95% CI), pp[a]	*P* value[b]
		Office-based phototherapy (n = 390)	Home-based phototherapy (n = 393)		
PGA 0/1 (clear/almost clear)	All	100 (25.6)	129 (32.8)	7.2 (0.8 to 13.5)	<.001
	I/II	47 (27.8)	58 (32.0)	4.2 (−5.4 to 13.8)	<.001
	III/IV	47 (26.1)	57 (33.5)	7.4 (−2.2 to 17.0)	<.001
	V/VI	6 (14.6)	14 (33.3)	18.7 (0.8 to 36.6)	<.001
DLQI ≤5 (no to small effect on patient's life)	All	131 (33.6)	206 (52.4)	18.6 (11.8 to 25.3)	<.001
	I/II	65 (38.5)	109 (60.0)	21.2 (11.0 to 31.5)	<.001
	III/IV	56 (31.1)	81 (47.6)	16.5 (6.4 to 26.6)	<.001
	V/VI	10 (24.4)	17 (40.5)	16.1 (−3.7 to 35.9)	.001

Abbreviations: ARD, adjusted risk difference; DLQI, Dermatology Life Quality Index; PGA, Physician Global Assessment; pp, percentage point.

[a] ARDs were calculated from odds ratios using marginal standardization.

[b] Statistical inference was based on noninferiority principles using a noninferiority margin of 15%.

Table 3. Secondary Outcomes

Outcome	Total No.	No. (%)		Difference (95% CI), pp[a]	*P* value
		Office-based phototherapy (n = 390)	Home-based phototherapy (n = 393)		
No. of d/wk a patient used topical concomitant psoriasis treatments at wk 12, mean (SD)	594	3.9 (2.9)	3.1 (2.8)	−0.8 (−1.3 to −0.4)	.001
Initiation of oral or biologic psoriasis treatments (baseline to wk 12)	588	16 (5.7)	9 (2.9)	−2.6 (−5.9 to 0.7)	.12
Patient-reported time spent on phototherapy per treatment, mean (SD), min	432	21.8 (18.2)	18.5 (20.9)	−3.2 (−7.0 to 0.6)	.09
Travel cost per treatment for office-based phototherapy group, mean (SD), $	190	19.9 (61.6)	NA	NA	NA
Travel time per treatment for office-based phototherapy group, mean (SD), min	190	50.3 (46.7)	NA	NA	NA
Achieved a minimal clinically important difference in DLQI of ≥4[b]	783	130 (33.3)	188 (47.8)	14.3 (7.5 to 21.1)	<.001
Achieved DLQI of 0 or 1 at wk 12[b]	783	52 (13.3)	100 (25.5)	12.0 (6.5 to 17.4)	<.001
Duration of treatment response, mean (SD), d after wk 12	273	74.2 (19.0)	77.3 (17.0)	3.1 (−1.4 to 7.5)	.18
75% Reduction in BSA × PGA[b]	783	94 (24.1)	140 (35.6)	11.5 (5.2 to 17.9)	<.001
90% Reduction in BSA × PGA[b]	783	68 (17.4)	101 (25.7)	8.2 (2.5 to 13.9)	.005

Abbreviations: BSA, body surface area; DLQI, Dermatology Life Quality Index; NA, not applicable; PGA, Physician Global Assessment; pp, percentage point.

[a] Adjusted by skin phototype.

[b] Nonresponse imputation.

attributable to the substantial barriers patients receiving office-based phototherapy encounter, including both direct and indirect costs and inconvenience, which limit adherence. Some of these barriers can be addressed through policy changes (eg, eliminating co-payments for office phototherapy). Others can be addressed by making home-based phototherapy more accessible to patients, given the limited geographical availability of office-based phototherapy. The present results support considering home-based phototherapy as a first-line treatment option for psoriasis, including for patients who have never received office-based phototherapy. Therefore, insurers should not require a successful trial of office-based phototherapy as a step prior to covering home-based phototherapy. Indeed, some large integrated networks have made home-based phototherapy widely available, reducing use of more expensive systemic agents, which is consistent with the present results.[35,36]

Strengths and Limitations

To our knowledge, LITE is the largest and most diverse study conducted of narrowband UV-B phototherapy for psoriasis to date.[37] A notable strength of the LITE study is that it was pragmatic by being embedded in routine, everyday care. Therefore, the results are likely generalizable to the broader population of patients with psoriasis. However, it is likely that we underestimated the direct and indirect costs of office-based phototherapy to patients, as individuals who had high co-payments or a long distance to travel for treatment frequently declined participation. Those assigned to home-based phototherapy received the device at no cost due to the aforementioned insurance barriers,

Table 4. Phototherapy Treatment and Adverse Events

Outcome	No. (%)		Difference (95% CI), pp	*P* value
	Office-based phototherapy (n = 390)	Home-based phototherapy (n = 393)		
No. of treatments, mean (SD)	18.0 (8.8)	26.8 (10.6)	8.9 (7.2-10.6)	<.001
≥1 Treatment	232 (59.5)	309 (78.6)	19.1 (12.8-25.5)	<.001
≥24 Treatments	62 (15.9)	202 (51.4)	35.5 (29.4-41.6)	<.001
Dose, mean (SD), J	1.0 (0.8)	1.2 (1.2)	0.2 (0.2-0.3)	<.001
Cumulative dose, mean (SD), J	17.3 (16.1)	31.4 (29.6)	14.2 (9.9-18.4)	<.001
Treatments with erythema >48 h or still red, No./total No. (%)[a]	46/3934 (1.2)	466/7957 (5.9)	5.5 (4.2-6.8)	<.001

Abbreviation: pp, percentage point.

[a] Counts and percentages are based on all treatments. Difference accounts for patient-level correlation of adverse events. Median starting dose for office-based phototherapy was 260 mJ for those with skin phototype I/II, 300 mJ for those with skin phototype III/IV, and 412.5 mJ for those with skin phototype V/VI, whereas median starting dose for home-based phototherapy was 300 mJ for those with skin phototype I/II, 400 mJ for those with skin phototype III/IV, and 700 mJ for those with skin phototype V/VI.

which would have made it infeasible to conduct this research. In 2024, Medicare covered the device we studied at $6040.88, with direct cost to patients varying based on their insurance plan.[38] Those randomized to home-based phototherapy initiated treatment within approximately 20 days, demonstrating the feasibility of starting treatment quickly when prior authorization barriers are removed. As expected in a pragmatic design, there were missing outcome data, as patients may not have returned to the office for follow-up. This phenomenon is also commonly seen with biologic therapies in everyday settings in which patients often do not initiate prescribed treatment and/or do not attend follow-up appointments.[39,40] Nevertheless, sensitivity analyses using different approaches to missing data were consistent with the primary analysis. Based on the tipping point analysis, it is unlikely that missing outcome data meaningfully affected the conclusions. We did not adjust for multiple comparisons; however, most differences were associated with very small *P* values, which suggests that they would still reach statistical significance even under conservative multiple testing adjustment.

Both home- and office-based phototherapy were well tolerated, with no discontinuations due to adverse effects; however, home-based treatment was associated with a higher frequency of persistent erythema. Episodes of persistent erythema are expected based on phototherapy dosing guidelines and did not appear to be clinically important; however, patients and/or clinicians who are concerned about this adverse effect could adjust the protocol to be less erythrogenic than the standard guidelines.[15] As expected, there was no evidence of misuse of home-based phototherapy based on evaluation of dosing data captured from the machines. Importantly, patients receiving phototherapy at home were more likely to start treatment at the recommended starting dose than those receiving office-based treatment, particularly in patients with darker skin. Therefore, the better observed responses for home-based phototherapy may be related to better adherence to treatment guidelines for both dosing and treatment frequency. LITE was designed to reflect routine care and, therefore, we did not collect physician-reported data on duration of treatment response; however, patient-reported data suggested strong persistence of benefits in HRQOL up to 12 weeks posttreatment discontinuation. Prior research suggests that patients maintain good objective control of psoriasis when no longer receiving phototherapy for about 6 to 12 months or longer and that maintenance treatment (ie, 1 phototherapy treatment per week) can further extend disease remission.[41-44] Hypothetically, long-term treatment with narrowband UV-B phototherapy could increase the risk of basal cell, squamous cell, and melanoma skin cancer in patients with fair skin; however, existing studies have not observed an increased risk for these skin cancers in those treated with this modality and followed for many years.[17,18]

Conclusions

In this randomized clinical trial, home-based phototherapy was noninferior to office-based phototherapy across all SPTs and for both patient- and physician-reported outcomes. Home-based phototherapy was substantially less burdensome to patients and had better treatment adherence than office-based phototherapy. Phototherapy delivered at home or in the office resulted in excellent outcomes for patients. Efforts should be made to make these safe, effective, and relatively inexpensive treatment options more available to patients in the modern era of psoriasis therapeutics.

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