Original Investigation / Orijinal Araştırma

DOI: 10.4274/turkderm.galenos.2026.69057

Turkderm-Turk Arch Dermatol Venereol 2026;60(3):128-134

A retrospective analysis of the efficacy and safety of phototherapy in pediatric dermatoses

Pediatrik dermatozlarda fototerapinin etkinliği ve güvenliğine ilişkin retrospektif bir analiz

Arzu Ferhatosmanoğlu*, Leyla Baykal Selçuk*, Mojgan Zeynali Balestani*, Hatice Bankoğlu Yıldırım, İbrahim Etem Arıca*, Yunus Saral**, Deniz Aksu Arıca***

*Karadeniz Technical University Faculty of Medicine, Department of Dermatology and Venereology, Trabzon, Türkiye

**Recep Tayyip Erdoğan University Faculty of Medicine, Department of Dermatology and Venereology, Rize, Türkiye

Abstract

Background and Design: This study aimed to evaluate the efficacy, tolerability, and safety of phototherapy in pediatric patients receiving treatment for dermatologic diseases.

Materials and Methods: We retrospectively analyzed the medical records of pediatric patients under 18 years of age who received narrowband ultraviolet B (NB-UVB) phototherapy between 2013 and 2023. Collected data included age, gender, dermatologic diagnosis, number of phototherapy sessions, treatment responses, and adverse events during therapy.

Results: A total of 76 patients, aged between 6 and 17 years (mean age: 12.01±3.47 years), were included in the study. Of these, 40 were male, and 36 were female. The most common diagnoses were vitiligo (n=27, 35.5%), psoriasis vulgaris (n=25, 32.9%), and atopic dermatitis (AD) (n=9, 11.8%), with the remaining patients presenting with less common dermatoses. The mean cumulative phototherapy dose was 58.2±51.6 J/cm^2 for vitiligo, 38.47±34.63 J/cm^2 for psoriasis vulgaris, and 11.95±8.78 J/cm^2 for AD. A complete or near-complete clinical response was observed in 14 patients with vitiligo (51.8%), 16 patients with psoriasis (64%), and 2 patients with AD (22.2%). The most frequent reasons for treatment discontinuation were non-compliance (n=16, 21%) and treatment failure (n=7, 9.2%). The most commonly reported adverse effect was phototherapy-induced burns, observed in 4 patients (5.2%).

Conclusion: While the long-term safety of phototherapy in children has not been fully established, the findings of this study indicate that NB-UVB is generally well tolerated. Phototherapy is a therapeutic option for pediatric patients with inflammatory dermatoses before the initiation of immunosuppressive treatments.

Keywords: Children, phototherapy, psoriasis, ultraviolet therapy, vitiligo

Öz

Amaç: Bu çalışma, dermatolojik hastalıklar nedeniyle tedavi alan pediatrik hastalarda fototerapinin etkinliğini, tolere edilebilirliğini ve güvenliğini değerlendirmeyi amaçlamıştır.

Gereç ve Yöntem: 2013 ile 2023 yılları arasında dar bant ultraviyole B (DB-UVB) fototerapisi alan 18 yaş altı pediatrik hastaların tıbbi kayıtları retrospektif olarak değerlendirildi. Yaş, cinsiyet, dermatolojik tanısı, fototerapi seans sayısı, tedavi yanıtları ve tedavi sırasında karşılaşılan yan etkiler kaydedildi.

Bulgular: Çalışmaya yaşları 6 ile 17 arasında değişen (ortalama yaş: 12,01±3,47 yıl) toplam 76 hasta dahil edilmiştir. Bunların 40'ı erkek ve 36'sı kızdı. En yaygın tanılar vitiligo (n=27, %35,5), psoriasis vulgaris (n=25, %32,9) ve atopik dermatit (AD) (n=9, %11,8) olup, geri kalan hastalar daha az yaygın dermatozlarla başvurmuştur. Ortalama kümülatif fototerapi dozu vitiligo için 58,2±51,6 J/cm^2, psoriasis vulgaris için 38,47±34,63 J/cm^2 ve AD için 11,95±8,78 J/cm^2 idi. Vitiligolu 14 hastada (%51,8), psoriasisli 16 hastada (%64) ve AD'li 2 hastada (%22,2) tam veya tama yakın klinik yanıt gözlenmiştir. Tedavinin kesilmesinin en sık nedenleri uyumsuzluk (n=16, %21) ve tedavi başarısızlığı (n=7, %9,2) olmuştur. En sık bildirilen advers etki 4 hastada (%5,2) gözlenen fototerapiye bağlı yanıktır.

Sonuç: Çocuklarda fototerapinin uzun vadeli güvenliği belirsizliğini korusa da, bu çalışma DB-UVB'nin genellikle iyi tolere edildiğini göstermektedir. İmmünsüpresif tedavilere başlamadan önce inflamatuvar dermatozları olan çocuk hastalarda fototerapi bir tedavi seçeneği olarak düşünülmelidir.

Anahtar Kelimeler: Çocuklar, fototerapi, psoriasis, ultraviyole tedavi, vitiligo

Address for Correspondence/Yazışma Adresi: Asst. Prof. Arzu Ferhatosmanoğlu, MD, Karadeniz Technical University Faculty of Medicine, Department of Dermatology and Venereology, Trabzon, Türkiye

E-mail: arzuferhatosman@gmail.com **ORCID:** orcid.org/0000-0002-1784-1645

Received/Geliş Tarihi: 03.07.2025 **Accepted/Kabul Tarihi:** 01.09.2026 **Publication Date/Yayınlanma Tarihi:** 30.09.2026

Cite this article as/Atıf: Ferhatosmanoğlu A, Baykal Selçuk L, Zeynali Balestani M, et al. A retrospective analysis of the efficacy and safety of phototherapy in pediatric dermatoses. Turkderm-Turk Arch Dermatol Venereol. 2026;60(3):128-134

Copyright© 2026 The Author(s). Published by Galenos Publishing House on behalf of the Society of Dermatology and Venereology.
This is an open access article under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND) International License.

Introduction

Phototherapy involves the controlled delivery of non-ionizing ultraviolet (UV) radiation to the skin, utilizing ultraviolet A (UVA), UVA-1, PUVA (UVA combined with psoralen), and ultraviolet B (UVB), including [both broadband (BB)-UVB] and [narrowband (NB)-UVB] spectra[1]. Among these modalities, NB-UVB is a well-established, safe, and effective treatment for a broad spectrum of dermatoses, such as psoriasis, atopic dermatitis (AD), vitiligo, polymorphic light eruption, pityriasis lichenoides chronica (PLC), lichen planus, and cutaneous T-cell lymphoma[2,3]. In the management of inflammatory dermatoses, NB-UVB exerts immunomodulatory effects by downregulating pro-inflammatory cytokines, inhibiting antigen presentation by Langerhans cells, and ultimately suppressing the cutaneous T-cell-mediated immune response[3]. NB-UVB therapy is generally well tolerated in pediatric populations[4]; however, adverse effects including erythema, xerosis, pruritus, pigmentary changes, bullous burns, and disease exacerbation have been reported[5]. Although there is substantial evidence supporting the efficacy and safety of phototherapy in adults, data regarding its use in children, especially for rare dermatologic conditions, are limited. The present study aims to evaluate the efficacy, tolerability, and safety of NB-UVB phototherapy in pediatric patients with dermatologic diseases.

Materials and Methods

In this study, we retrospectively analyzed the data of pediatric patients under 18 years of age who received NB-UVB phototherapy at Karadeniz Technical University Faculty of Medicine and Recep Tayyip Erdoğan University Faculty of Medicine between 2013 and 2023. Patient records were reviewed to collect information on age, sex, dermatologic diagnosis, number of phototherapy sessions, treatment response, and adverse effects observed during treatment.

NB-UVB phototherapy was administered two to three times weekly. The initial dose ranged from 0.15 to 0.30 J/cm^2 depending on the patient's skin phototype and disease characteristics. In the absence of significant erythema or other adverse effects, the dose was increased by 10-20% at subsequent sessions according to the disease type and treatment tolerance. Dose adjustments were made based on clinical response and side effects throughout the treatment course.

Treatment efficacy was assessed through routine clinical evaluations performed during follow-up visits. Because this retrospective study included multiple dermatoses, we used disease-specific clinical response criteria. For psoriasis vulgaris (PV), guttate psoriasis, AD, classic cutaneous lichen planus, PLC, pityriasis rosea (PR), and mycosis fungoides (MF), we defined treatment success as clearance of more than 75% of skin lesions. For vitiligo, we defined treatment success as repigmentation of more than 50% of affected areas. Complete or near-complete response was based on the overall clinical assessment recorded in the medical charts and did not require complete repigmentation across all affected body regions. Because of the retrospective design, we evaluated response globally, and separate assessments for individual anatomical sites, such as the face, trunk, and extremities, were not available. For alopecia areata, treatment success was defined as regrowth of vellus hair in more than 50% of alopecic areas. For morphea and lichen sclerosus, treatment success was defined as the absence of new lesions, no enlargement of existing lesions, and no clinical signs of disease activity. Clinicians evaluated patients at regular intervals throughout treatment. We discontinued NB-UVB therapy based on achievement of the desired clinical response, lack of further improvement after repeated treatment sessions, occurrence of adverse effects, or physician judgment based on the underlying disease and individual patient characteristics. During NB-UVB treatment, moisturizers and topical corticosteroids were allowed when clinically indicated. No concomitant systemic treatments were administered during phototherapy. The Scientific Research Ethics Committee of our Medical Faculty approved the study (protocol no.: 2025/85, date: 27.05.2025). Given the retrospective nature of the study, which was based exclusively on data obtained from existing medical records and involved no direct patient contact or additional intervention, individual informed consent was not obtained. No personally identifiable patient information was included in the study database or reported in the manuscript.

Statistical Analysis

Statistical analyses were conducted using IBM SPSS Statistics for Windows, version 23.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics summarized patient demographics, clinical characteristics, treatment responses, reasons for treatment discontinuation, and adverse events. Continuous variables are reported as mean ± standard deviation, and categorical variables as frequencies and percentages. Because of the retrospective study design and small sample sizes within individual disease groups, we did not perform formal comparative analyses. Results were interpreted descriptively.

Results

The study included 76 patients aged 6 to 17 years: 36 (47.4%) female and 40 (52.6%) male. The mean age was 12.01±3.47 years. Fitzpatrick skin type distribution was as follows: 81.6% type 3, 13.2%

Table 1. Sociodemographic characteristics of patients receiving NB-UVB treatment

Variables	**n (%)**
The mean age ± SD (years)	12.01±3.47
Gender	
Female	36 (47.4)
Male	40 (52.6)
Fitzpatrick types	
Type 2	10 (13.2)
Type 3	62 (81.6)
Type 4	4 (5.2)
Disease classification	
Vitiligo	27 (35.5)
Psoriasis	25 (32.9)
Atopic dermatitis	9 (11.8)
PLC	6 (7.9)
Morphea	3 (3.9)
Mycosis fungoides	3 (3.9)
PLEVA	1 (1.3)
Parapsoriasis	1 (1.3)
Pityriasis rosea	1 (1.3)

PLC: Pityriasis lichenoides chronica, PLEVA: Pityriasis lichenoides et varioliformis acuta, SD: Standard deviation, NB-UVB: Narrowband-ultraviolet B

Turkderm - Turk Arch Dermatol Venereol
2026;60(3):128-134

type 2, and 5.2% type 4. The most common diseases in this study were vitiligo (n=27, 35.5%), PV (n=25, 32.9%), and AD (n=9, 11.8%). Less frequent were PLC 6 (7.9%), MF (n=3, 3.9%), morphea (n=3, 3.9%), pityriasis lichenoides et varioliformis acuta (PLEVA) (n=1, 1.3%), parapsoriasis (PP) (n=1, 1.3%), and PR (n=1,1.3%). Table 1 summarizes the sociodemographic characteristics of patients receiving NB-UVB treatment. Treatment response to phototherapy showed that 52.6% of patients achieved complete or near-complete response, while 8% had minimal response, no response, or a disease flare-up. The most common reason for treatment discontinuation was non-compliance, reported in 21% of the patients. Only one patient with AD experienced a flare-up during treatment. Adverse events were documented in 9.2% of the patients receiving phototherapy, with burns being the most frequent, occurring in 5.2% of cases. Table 2 summarizes treatment responses, reasons for treatment discontinuation, and adverse effects observed during phototherapy, categorized by disease.

Vitiligo

The vitiligo cohort consisted exclusively of patients with non-segmental vitiligo. Patients with segmental vitiligo were not included in the study. A total of 27 patients received NB-UVB therapy. Of these, 14 patients (51.8%) achieved a complete or near-complete response, 10 patients (37%) demonstrated a significant response, and 3 patients (11.1%) exhibited a moderate response. Treatment non-compliance was observed in 7 patients (25.9%), while 2 patients (7.4%) discontinued treatment due to the COVID-19 pandemic, and 1 patient (3.7%) discontinued treatment following an adverse event. Burns were reported in 3 patients (11.1%) during treatment. The mean number of phototherapy sessions was 50.89±31.19, and the mean cumulative dose was 58.2±51.6 J/cm^2.

Psoriasis

The psoriasis cohort consisted of patients with plaque-type and guttate psoriasis; patients with pustular and erythrodermic psoriasis were not included. A total of 25 patients received NB-UVB therapy. Of these, 16 (64%) showed a complete or near-complete response, 1 (4%) showed a significant response, 6 (24%) had a moderate response, and 2 (8%) showed no response. Treatment non-compliance was observed in 5 patients (20%), treatment failure in 2 patients (8%), and discontinuation due to the COVID-19 pandemic in 1 patient (4%). The mean number of sessions was 33.52±24.6, and the mean cumulative dose was 38.47±34.63 J/cm^2.

Atopic dermatitis

A total of 9 patients received NB-UVB therapy. Of these, 2 patients (22.2%) had a complete or near-complete response, 1 patient (11.1%) had a significant response, 2 patients (22.2%) had a moderate response, and 4 patients (44.4%) had no response or experienced a disease flare-up. Reasons for treatment discontinuation included non-compliance in 1 patient (11.1%), treatment failure in 3 patients (33.3%), adverse events in 2 patients (22.2%), and disease flare-up in 1 patient (11.1%). The mean number of treatment sessions was 24±13.78, and the mean cumulative dose was 11.95±8.78 J/cm^2.

PLC

A total of 6 patients received NB-UVB therapy. Of these, 3 patients (50%) achieved a complete or near-complete response, 2 patients (33.3%) showed a significant response, and 1 patient (16.6%) showed no response. Treatment non-compliance was observed in 3 patients

Table 2. Summary of treatment responses, treatment discontinuation reasons, and adverse effects by disease during phototherapy

	Vit.	PV	AD	PLC	Morphea	MF	PLEVA	PP	PR	Total
Treatment responses to phototherapy										
Complete or near-complete response	14	16	2	3	1	1	1	1	1	40 (52.6)
Significant response	10	1	1	2	0	2	0	0	0	16 (21.05)
Moderate response	3	6	2	0	1	0	0	0	0	12 (15.8)
Minimal response / No response / Flare-up	0	2	4	1	1	0	0	0	0	8 (10.5)
Reasons for treatment discontinuation										
Treatment non-compliance	7	5	1	3	0	0	0	0	0	16 (21)
Treatment failure	0	2	3	0	2	0	0	0	0	7 (9.2)
Adverse event	1	0	2	0	0	0	0	0	0	3 (3.9)
Disease flare-up	0	0	1	0	0	0	0	0	0	1 (1.3)
Treatment discontinuation due to the COVID-19 pandemic	2	1	0	0	0	0	0	0	0	3 (3.9)
Adverse effects observed during phototherapy										
Burn	3	0	1	0	0	0	0	0	0	4 (5.2)
Pruritus	0	1	0	1	0	1	0	0	0	3 (3.9)
Post-inflammatory hyperpigmentation	0	0	0	0	0	0	1	0	0	1 (1.3)
Post-inflammatory hypopigmentation	0	0	0	0	0	0	1	0	0	1 (1.3)
Disease flare-up	0	0	1	0	0	0	0	0	0	1 (1.3)

Vit.: Vitiligo, PV: Psoriasis vulgaris, AD: Atopic dermatitis, PLC: Pityriasis lichenoides chronica, MF: Mycosis fungoides, PLEVA: Pityriasis lichenoides et varioliformis acuta, PP: Parapsoriasis, PR: Pityriasis rosea

(50%). The mean number of treatment sessions was 25.83±13.94, and the mean cumulative dose was 34.96±23.59 J/cm^2.

Morphea

Three patients with morphea received phototherapy. One patient (33.3%) achieved a complete or near-complete response, one (33.3%) showed a moderate response, and one (33.3%) exhibited no response.

Mycosis Fungoides

Three patients with MF received phototherapy. One patient (33.3%) achieved a complete or near-complete response, while two patients (66.7%) demonstrated a significant response.

PLEVA

One patient received phototherapy and achieved a complete or near-complete response.

Parapsoriasis

The single patient with PP achieved a complete or near-complete response following phototherapy.

PR

One patient with PR received phototherapy and achieved a complete or near-complete response.

Patients with vitiligo, MF, and psoriasis had the highest mean number of treatment sessions. Supplementary Table 1 summarizes the mean number of sessions and mean cumulative doses by disease type.

Discussion

This study evaluated the efficacy, tolerability, and safety of NB-UVB phototherapy in pediatric patients with a range of dermatologic conditions. Consistent with previous reports, vitiligo, psoriasis, and AD were the most frequently treated diseases in this cohort[6,7]. In a study involving 98 pediatric patients, the mean age was 10.5 years, with a female predominance (61%)[6]. The most frequently treated dermatological conditions were psoriasis (48%), vitiligo (17%), and AD (16%). A complete treatment response was observed in 35% of patients, while mild adverse effects were reported in 16%. Similarly, in a study by Menteşoğlu et al.[8], 108 pediatric patients were included, with a mean age of 12.6 years; 53.7% were female and 46.3% male. The most commonly treated conditions with NB-UVB phototherapy were PV (37.9%), vitiligo (33.3%), and guttate psoriasis (11.1%). A high proportion of patients (91.7%) responded positively to treatment, and only 18.5% experienced mild, self-limiting adverse effects such as erythema, pruritus, and burning sensations; none required discontinuation of therapy. Our findings align with these previous studies, supporting the effectiveness and good tolerability of NB-UVB phototherapy in pediatric dermatologic diseases. Overall treatment outcomes were favorable, and adverse effects were infrequent, further confirming NB-UVB as a safe and effective therapeutic option in this population. Regarding vitiligo, 37.5% (3/8) of children in the previous study showed significant improvement[7]. In a study of 36 patients with vitiligo, 86.1% responded to treatment, with a mean of 56.8±32.7 phototherapy sessions and a mean cumulative phototherapy dose of 41.2±34.5 J/cm^2. Thirty-one patients responded to treatment (86.1%)[8]. Our findings are in line with previous reports and further reinforce the role of NB-UVB phototherapy as an effective treatment option for pediatric vitiligo. The favorable outcomes observed in our cohort may, at least in part, reflect greater treatment exposure and higher cumulative UVB doses. In a previous study, NB-UVB therapy was particularly effective for psoriasis, with 85% (55/65) of patients achieving significant improvement or clearance, whereas 6.2% (4/65) showed no improvement or worsening, and one patient discontinued treatment due to grade 3 erythema[7]. In comparison, 68% (17/25) of psoriasis patients in our cohort achieved significant improvement or clearance, while only 8% (2/25) showed no improvement. Notably, we observed no burns among our psoriasis patients. Pavlovsky et al.[9] also evaluated the efficacy of NB-UVB in pediatric psoriasis. Although the mean age of psoriasis patients was comparable between the two studies (12.08±3.51 vs. 12±4 years), our cohort received a lower mean cumulative UVB dose (38.47±34.63 vs. 46.5 J/cm^2). Despite this, our study had a higher complete response rate [64% (16/25) vs. 51% (40/79)]. Another pediatric study reported a mean of 20 NB-UVB sessions and a cumulative dose of 32.10 J/cm^2 for psoriasis[7]. The higher mean number of sessions observed in our psoriasis cohort (33.52±24.6) may reflect the real-world nature of our study, in which treatment duration was individualized according to clinical response and physician judgment rather than a predefined treatment protocol. In addition, some patients continued phototherapy beyond initial clinical improvement to consolidate response, which may have contributed to the higher number of sessions. For AD, the previous study reported a lower response rate, with 60% (6/10) responding to treatment, while three patients experienced disease worsening and one developed grade 3 erythema[7]. Compared with previous reports[9], patients with AD in our cohort were younger and received lower cumulative UVB doses. Treatment was generally well tolerated, although a small number of patients experienced disease exacerbation and mild treatment-related adverse effects. The relatively lower treatment response in our study may be explained by younger patient age, reduced treatment adherence and cumulative UVB exposure, differences in disease severity and treatment protocols, and the small sample size.

Additionally, in a study by Ersoy-Evans et al.[10], which analyzed 113 children undergoing phototherapy, more than 75% improvement was reported in 5 children with PLC treated with NB-UVB. Another retrospective study involving 9 patients with PLEVA/PLC reported very good responses in 3 patients, good responses in 3 patients, and no response in the remaining 3[11]. Eustace et al.[12] reported a mean number of 24.7 sessions and a mean cumulative dose of 33 J/cm^2 in patients with PLC. Our findings are consistent with these reports and further support the effectiveness of NB-UVB phototherapy in pediatric PLC/PLEVA. In a recent study, treatment response was reported to be 100% in patients with MF and morphea[8]. In our cohort, favorable responses were also observed among patients with MF and morphea, although complete clearance was not achieved in all cases. In addition, although we included only a small number of patients with PR and PP, we also observed favorable responses in these conditions. Table 3 summarizes similar studies in the literature. Our findings demonstrated that more than half of the patients (52.6%) achieved a complete or near-complete response, a slightly higher rate than those reported in some previous studies, which documented complete response rates ranging from approximately 35% to 51% in pediatric populations[6,9]. The adverse effects observed in our study were generally mild and consisted predominantly of erythema and pruritus.

Turkderm - Turk Arch Dermatol Venereol
2026;60(3):128-134

Table 3. A summary of similar studies in the literature

Study	Disease	Treatment response	Reasons for discontinuation	Mean number of sessions	Mean cumulative dose (J/cm²)
In our study	**Atopic dermatitis**	NB-UVB therapy, n=9 Complete or near-complete response: 2 (22.2%), significant response: 1 (11.1%), moderate response: 2 (22.2%), no response or experienced a disease flare-up: 4 (44.4%)	Non-compliance in 1 (11.1%), treatment failure in 3 (33.3%), adverse events in 2 (22.2%), and disease flare-up in 1 (11.1%).	24±13.78	11.95±8.78 J/cm²
	Psoriasis	NB-UVB therapy, n=25 Complete or near-complete response: 16 (64%), 1 (4%) demonstrated a significant response, 6 (24%) had a moderate response and 2 (8%) showed no response	Non-compliance in 5 (20%), treatment failure in 2 (8%), discontinued treatment due to the COVID-19 pandemic 1 (4%)	33.52±24.6	38.47±34.63 J/cm²
	Vitiligo	NB-UVB therapy, n=27 Complete or near-complete response: 14 (51.8%), significant response: 10 (37%) and moderate response: 3 (11.1%)	Non-compliance in 7 (25.9%), 2 patients (7.4%) discontinued treatment due to the COVID-19 pandemic, and 1 (3.7%) discontinued treatment following an adverse event.	56.8±32.7	41.2±34.5 J/cm²
	PLC	NB-UVB therapy, n=6 Complete or near-complete response: 3 patients (50%), significant response: 2 patients (33.3%), no response: 1 patient (16.6%)	Treatment non-compliance was observed in 3 patients (50%).	25.83±13.94	34.96±23.59 J/cm²
Pasić et al.[11]	**PLEVA/ PLC**	NB-UVB therapy (n=9) Excellent, 3 (33.3%) patients. Good, 3 (33.3%) patients No change, 3 (33.3%) patients.	Not specified	Mean 19,range 14-24	Mean 6.5 J/cm², range 3.023-11.8 J/cm²
	Atopic dermatitis	Combination of UVA and NB-UVB (n=21) Excellent, 10 (45.4%) patients. Good, 5 (22.7%) patients. Moderate, 7 (31.8%) patients.	Not specified	Mean 18, range 9-71	Mean 6.14 J/cm², range 1.3-10.42 J/cm²
	Psoriasis	NB-UVB (n=20) Excellent, 9 (45%) patients Good, 4 (20%) patients Moderate, 4 (20%) patients No change, 3 (15%) patients	None of the children discontinued therapy	Mean 19, range 10-39	Mean 6.61 J/cm², range 2.4-24.5 J/cm²
Eustace et al.[12]	**Atopic dermatitis**	NB-UVB (n=44) 76% had documented clear to almost clear skin	11 (25%) of children discontinued treatment	Mean 28.9, range 17-40	Mean UV dose of 53 J/cm²
	Psoriasis	NB-UVB (n=21) Overall initial clearance after phototherapy was 86%	6 (28.6%) of children discontinued treatment	Mean 29.9, range 22-43	Mean UV dose of 52.4 J/cm²
	PLC	NB-UVB (n=3) All patients had subjective improvement with clear to almost clear skin	Not discontinued	Mean 24.7, range 22-30	Mean UV dose of 33 J/cm²
Ersoy-Evans et al.[10]	**Psoriasis**	Total patients: n=68 Response was achieved in 92.9% of the patients treated with NB-UVB (n=26), in 83.3% treated with PUVA (n=5), and in 93.3% treated with UVB (n=28).	Not specified.	Mean 25.8±10.6 for NBUVB, Mean 28.8±13.3 for UVB, Mean 108±68.5 for PUVA	Median 20 J/cm² for NBUVB, Mean 21±15.7 J/cm² for UVB Mean 498.8±377 J/cm² for PUVA

Table 3. Continued

Study	Disease	Treatment response	Reasons for discontinuation	Mean number of sessions	Mean cumulative dose (J/cm²)
	Vitiligo	Total patients: 26 9 (NB-UVB), response rate: 50% (n=4), 8 (PUVA), response rate: 57% (n=4) 9 (topical meladinine and UVA), response rate: 28.5 (n=2)	Not specified	Mean 84.8±58.3 for NBUVB, Mean 105.2±62.5 for PUVA Median 50 (25-159) for topical meladinine and UVA	Median 70 (9-301) 20 J/cm² for NBUVB, Mean 303±235 J/cm² for PUVA Mean 256±227 J/cm² for topical meladinine and UVA
	PLC	UVB: 66.7% (n=12) of the patients, NB-UVB (27.8%, n=5) PUVA (5.6%, n=1) Response to treatment 10 (83.3%)	Not specified	Mean number of treatments for response was 22	Median 11 mJ/cm² (range: 4-60 mJ/cm²)
Pavlovsky et al.[9]	**Psoriasis**	Total patients: 79, NB-UVB 51% (40/79) achieved clearance, 41% (33/79) had good response and 8% (6/79) had partial response	Not specified	Not specified	46.5 J/cm²
	Atopic dermatitis	Total patients: 36 NB-UVB 25% (9/36) achieved clearance, 44% (16/36) had good response and 31% (11/36) had partial response	Not specified	Not specified	51.6 J/cm²
Menteşoğlu et al.[8]	**Psoriasis**	NB-UVB: n=40 Response to treatment 40 (100%)	None of the children	Mean 37.2±28.1	Mean 25.7±29.1 J/cm²
	Vitiligo	NB-UVB: n=36 Response to treatment: 31 (%86.1)	Not specified	Mean 56.8 (±32.7)	Mean 41.2 (±34.5) J/cm²

PLC: Pityriasis lichenoides chronica, PLEVA: Pityriasis lichenoides et varioliformis acuta, UVB: Ultraviolet B, UVA: Ultraviolet A, NB: Narrowband

Similarly, in another study conducted in Türkiye, 12.1% of patients experienced side effects, 6.1% reported erythema, and 3.1% reported pruritus[13]. Non-adherence was the primary reason for treatment discontinuation (21%), consistent with previous reports highlighting adherence as a significant challenge in pediatric phototherapy protocols[11,12]. Although NB-UVB was generally well tolerated, side effects varied in frequency and severity depending on the underlying disease. Notably, in our study, only one patient with AD experienced a disease flare during treatment, leading to discontinuation due to this adverse event. The higher number of sessions received by patients with vitiligo and MF in our study likely reflects the chronic nature of these conditions and their associated treatment demands. Furthermore, differences in Fitzpatrick skin phototype distribution between study populations may partly explain variations in cumulative UVB doses reported in the literature. Because skin phototype influences UV sensitivity, treatment tolerance, and dose-escalation protocols, interpret comparisons of cumulative UVB doses across studies with caution.

Study Limitations

This study has several limitations. First, its retrospective design relied exclusively on medical records, precluding direct patient assessment. Second, the sample size was relatively small for some disease groups, and follow-up duration varied across different dermatoses. Disease duration information was also not consistently available for all patients. In addition, treatment discontinuation and non-adherence occurred in a subset of patients, which may have affected treatment outcomes. Because we included all eligible patients to reflect real-world clinical practice, the reported response rates may underestimate the effectiveness of NB-UVB phototherapy among patients who completed the planned treatment course. Finally, the medical records did not consistently document detailed information on the severity of phototherapy-related adverse effects, including burn grading. These limitations should be considered when interpreting the findings and may restrict the generalizability of the results.

Conclusion

NB-UVB phototherapy is a valuable therapeutic option for pediatric patients with inflammatory and depigmenting dermatoses, providing a favorable balance of efficacy and tolerability. These findings support considering NB-UVB before initiating systemic immunosuppressive therapies in suitable patients. Future prospective studies with larger cohorts and longer follow-up are needed to elucidate further the long-term effectiveness and safety of NB-UVB phototherapy in pediatric populations.

Ethics

Ethics Committee Approval: The Scientific Research Ethics Committee of Karadeniz Technical University Faculty of Medicine approved the study (protocol no.: 2025/85, date: 27.05.2025).

Informed Consent: Given the retrospective nature of the study, which was based exclusively on data obtained from existing medical records and involved no direct patient contact or additional intervention, individual informed consent was not obtained. No personally identifiable patient information was included in the study database or reported in the manuscript.

Footnotes

Authorship Contributions

Concept: A.F., L.B.S., M.Z.B., H.B.Y., İ.E.A., Y.S., D.A.A., Design: A.F., L.B.S., M.Z.B., H.B.Y., Data Collection or Processing: A.F., L.B.S., M.Z.B., H.B.Y., İ.E.A., Y.S., D.A.A., Analysis or Interpretation: A.F., L.B.S., M.Z.B., H.B.Y., D.A.A., Literature Search: A.F., M.Z.B., İ.E.A., Writing: A.F., M.Z.B.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

Supplementary Table 1. https://d2v96fxpocvxx.cloudfront.net/beb8919b-f013-4ea1-b1c8-40332e840fe1/content-images/614304bc-e0c4-4112-96a2-e6d87d24813c.pdf

References

1. Abel EA. Phototherapy. Dermatol Clin. 1995;13:841-9.
2. Ibbotson SH. A Perspective on the use of NB-UVB phototherapy vs. PUVA photochemotherapy. Front Med (Lausanne). 2018;5:184.
3. Myers E, Kheradmand S, Miller R. An update on narrowband ultraviolet B therapy for the treatment of skin diseases. Cureus. 2021;13:e19182.
4. Dayal S, Pathak K, Sahu P, Jain VK. Narrowband UV-B phototherapy in childhood atopic dermatitis: efficacy and safety. An Bras Dermatol. 2017;92:801-6.
5. Branisteanu DE, Dirzu DS, Toader MP, et al. Phototherapy in dermatological maladies (Review). Exp Ther Med. 2022;23:259.
6. Magdaleno-Tapial J, Ortiz-Salvador JM, Valenzuela-Oñate C, Marí-Cornejo P, Esteve-Martínez A, Pérez-Ferriols A. Comparison of phototherapy in pediatric and adult patients. Actas Dermosifiliogr (Engl Ed). 2020;111:41-6. English, Spanish.
7. Seccombe E, Wynne MD, Clancy C, Godfrey KM, Fityan A. A retrospective review of phototherapy in children, at a tertiary paediatric dermatology unit. Photodermatol Photoimmunol Photomed. 2021;37:34-8.
8. Menteşoğlu D, Kurmuş GI, Kartal SP. Use of narrow-band ultraviolet B in pediatric dermatology patients: ten years of experience from a tertiary care hospital. Arch Dermatol Res. 2025;317:626.
9. Pavlovsky M, Baum S, Shpiro D, Pavlovsky L, Pavlotsky F. Narrow band UVB: is it effective and safe for paediatric psoriasis and atopic dermatitis? J Eur Acad Dermatol Venereol. 2011;25:727-9.
10. Ersoy-Evans S, Altaykan A, Şahin S, Kölemen F. Phototherapy in childhood. Pediatr Dermatol. 2008;25:599-605.
11. Pasić A, Ceović R, Lipozencić J, et al. Phototherapy in pediatric patients. Pediatr Dermatol. 2003;20:71-7.
12. Eustace K, Dolman S, Alsharqi A, Sharpe G, Parslew R. Use of phototherapy in children. Pediatr Dermatol. 2017;34:150-5.
13. Oğuz ID, Akşan B. Phototherapy in pediatric patients: 5-years single center experience. Cerasus J Med. 2024;1:100-8.