



Phototherapy: Kids are not just little people

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Abstract Phototherapy is the delivery of treatments in the form of visible or ultraviolet light for the therapeutic care of a patient. Usage of phototherapy in children is affected by limited data in the medical literature, the inability of some children to stand still during the delivery of therapy, parental concerns regarding risks of therapy, and scheduling difficulties. Despite the limitation of data, there are publications in support of usage of phototherapy, especially for psoriasis, atopic dermatitis, and vitiligo in both children and adults. This contribution provides an overview of the utility of phototherapy in skin conditions with a specific focus on the differences that exist in the data on and the delivery of phototherapy for adults and children.

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There is a lack of long-term data for children treated with phototherapy and even less comparative information with adults. This contribution seeks to answer practical questions surrounding the application of phototherapy in all age groups, focusing on the differences between usage and data patterns for the adult and pediatric populations.

A criticism of many therapies is that treatment recommendations for children are often extrapolated from adults, rather than specifically evaluated in the pediatric population. Are there published series describing the usage of phototherapy in children?

Yes. There are several studies looking specifically at phototherapy usage in children. Most of the published

literature is in the form of retrospective case series or cross-sectional analyses. Randomized controlled trial data comparing the efficacy and clinical effectiveness of various phototherapy modalities against each other and against other standards of treatment is lacking; however, the current data suggest that phototherapy is an effective treatment for children and, as in adults, should be a therapeutic option when disease is widespread or refractory to topical therapies. Most of the published reports regarding pediatric phototherapy concern the treatment of psoriasis, atopic dermatitis, and vitiligo (Table 1). In addition, there are case series (Table 2) regarding phototherapy for the treatment of pediatric mycosis fungoides (MF), particularly hypopigmented MF, which is much more common in children than adults. Early stage pediatric MF is highly responsive to both narrow-band ultraviolet B (NB-UVB) and psoralen ultraviolet A (PUVA); response to treatment appears to be more rapid and the remission more durable with PUVA compared to NB-UVB.^{1–3}

The 308-nm excimer laser device allows for targeted therapy and has been found to be equally effective but

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Table 1 Summary of studies evaluating phototherapy in children

Authors	Country	Number of children	Mean age in years (range)	Modality	Mean cumulative dose (J/cm ²)	Response
Atherton et al ⁶⁶	United Kingdom	15 AD patients	13.6 (10.1-14.7)	PUVA	155 ^a	93.3% achieved initial or near clearance
Clayton et al ⁶⁷	United Kingdom	50 AD patients	12 (4-16) ^b	NB-UVB	29.34	40% achieved complete clearance or minimal residual activity, 49% achieved partial clearance
Collins et al ⁴⁵	United Kingdom	40 AD patients	11 (2.5-15) ^b	NB-UVB	17.9	22.5% achieved complete clearance, 57.5% achieved partial clearance
Ersoy-Evans et al ⁶⁸	Turkey	54 psoriasis patients 20 vitiligo patients	13 (3-17)	PUVA	498.8	83.3% achieved >75% response
				NB-UVB	20	92.9% achieved >75% response
				UVB	21	93.3% achieved >75% response
				PUVA	303	57% achieved >50% repigmentation
				NB-UVB	70	50% achieved >50% repigmentation
Jain et al ⁶⁹	India	20 psoriasis patients	Not given (6-14)	Topical meladinine and UVA	256	28.5% achieved >50% repigmentation
				NB-UVB	4.3	60% achieved >90% PASI reduction, 15% achieved 70-90% reduction
Jury et al ⁴⁸	United Kingdom	35 psoriasis patients 25 AD patients	12 (4-16)	NB-UVB	Not given	63% achieved clearance or minimal residual disease (MRD) 68% achieved MRD
Kanwar et al ⁷⁰	India	20 vitiligo patients	10.4 (5-14)	NB-UVB	39.7	75% achieved >75% repigmentation, 20% achieved 50-75% repigmentation
Njoo et al ⁷¹	Netherlands	51 vitiligo patients	9.9 (4-16)	NB-UVB	91.3	53% achieved >75% repigmentation
Pasic et al ⁷²	Croatia	20 psoriasis patients 21 AD patients 9 Pityriasis lichenoides patients 6 localized scleroderma	9.5 (6-14) 11.5 (4-15) 11.5 (8-16) 11 (9-16)	NB-UVB	6.61	45% achieved >90% PASI score reduction, 20% achieved 70-90% reduction
				UVA and NB-UVB	UVB 6.14	45.4% achieved >90% SCORAD Index reduction, 22.7% achieved 70-90% reduction
				NB-UVB	UVA 69.7	33.3% complete response, 33.3% partial response
				PUVA	6.5	Softening of plaques seen in all patients
Pavlovsky et al ⁷³	Israel	88 psoriasis patients 41 AD patients	12 (2-18)	NB-UVB	46.5	51% complete response, 41% achieved >75% response
					51.6	25% complete response, 44% achieved >75% response
Percivalle et al ⁷⁴	Italy	28 vitiligo patients	10.1 (3-15)	NB-UVB	156.12 ± 79.4	14.3% achieved ≥ 75% repigmentation, 28.6% achieved 50-74% repigmentation
Sen et al ⁷⁵	Turkey	36 vitiligo patients 30 psoriasis patients	12.2 (5-16)	NB-UVB	231.9	16.7% achieved ≥ 90% response, 27.8% achieved 89-75% response
					30.9	60% achieved ≥ 90% response, 13.3 achieved 89-75% response
Tan et al ⁷⁶	New Zealand	61 AD patients 38 psoriasis patients	11 (2.6-15.9)	NB-UVB	23.1	62.7% achieved >75% clearance 88.2% achieved >75% clearance
Zamberk et al ⁷⁷	Spain	20 psoriasis patients	13 (5-17)	NB-UVB	40.8 ^a	52.2% achieved >90% response, 17.4% achieved 75-90% response

^a Reported as median cumulative dose (J/cm²)^b Reported as median age

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