

## LETTER

# 'Light treatment'? The burden of treatment in ultraviolet B phototherapy

Burden of treatment (BOT) refers to the workload of health care experienced by those with chronic conditions and consequences on well-being.<sup>1</sup> High BOT results in poor adherence to treatment plans, worse outcomes for patients, reduced quality-of-life and wasted resources.<sup>2</sup> Ultraviolet B phototherapy (UVB) is a safe and effective treatment used for several dermatological conditions including psoriasis, vitiligo, eczema, lichen planus, mycosis fungoides, pityriasis lichenoides, nodular prurigo, pruritus, urticaria, alopecia areata and morphea.<sup>3</sup> UVB is well-tolerated, with a very low risk of ultraviolet burn, skin ageing and skin cancer. However, it requires frequent travel for attendance in dermatology departments, with associated time and cost implications. The strain of this attendance may result in an increased BOT when compared to other treatment modalities. With the advent of newer oral and biological therapies for immune-mediated dermatologic diseases, the role of phototherapy has diminished.<sup>4</sup> However, UVB is less expensive than systemic immunomodulatory agents and avoids potential immunosuppression.<sup>5</sup>

The aim of this study was to assess and understand the BOT of UVB in dermatology.

To grade the BOT and to obtain a deep comprehensive understanding of the issue, a mixed methods study was designed, using both quantitative and qualitative methods. For the quantitative component of the study, patients were asked to complete a validated treatment burden questionnaire,<sup>6</sup> modified for use in dermatology. This questionnaire is composed of sections with questions related to treatments, and financial and administrative burden. Answers are provided on a Likert scale from 0 indicating 'not a problem' to 10 indicating 'a big problem'. Patients were first asked to rate different aspects of topical treatments, including appraisals of awkwardness of emollients, application frequency and impact on other daily activities. Patients were then asked to rate different aspects of BOT related to phototherapy, such as the frequency and duration of required attendances and the associated financial and time burden. For the qualitative component, semi-structured interviews were conducted by telephone until data saturation was complete, with set questions on the general domains of BOT of UVB. Patients currently receiving UVB, or who had recently completed a course of UVB, were invited to participate. The structured interview included questions on patients' experience of accessing phototherapy,

complications during treatment, associated financial and time ramifications and previous treatments for their skin disease.

Forty-five patients (21 male, 24 female) completed questionnaires. The mean age was 41.5 years (standard deviation 24.8 years, range 18–80 years). Most (88.9%,  $n = 40$ ) travelled by car. Indications for UVB-included psoriasis ( $n = 23$ ), atopic dermatitis ( $n = 18$ ), pityriasis lichenoides chronica ( $n = 2$ ), aquagenic pruritus ( $n = 1$ ) and granuloma annulare ( $n = 1$ ). Average duration of skin disease was 18.3 years (standard deviation 10.2 years, range 0.5–72 years). Previous topical treatments included emollients (95.6%,  $n = 43$ ), topical corticosteroids (90.7%,  $n = 39$ ) and topical calcineurin inhibitors (26.7%,  $n = 12$ ). Almost one third (31.1%,  $n = 14$ ) had previously been on oral therapy (antihistamines, oral corticosteroids and methotrexate). The average burden score for UVB was 2.3/10, which was lower than the 3.9/10 reported for topical therapy ( $p < .01$ ) (Figure 1). The most burdensome aspect of UVB was rated as 'frequency of treatment' with a mean of 3.5/10. The least burdensome was 'time required' to complete individual phototherapy sessions at 1/10 (Figure 2).

Telephone interviews were held with eight patients, five of whom had psoriasis and three of whom had atopic dermatitis. Analysis grouped themes into frequency and scheduling, travel, the 'topical-sparing' benefits of phototherapy and fear of other treatment modalities. Patients found the frequent and prolonged nature of a treatment course relatively burdensome but usually found each session quick and efficient. Obstacles to therapy included time off work or education and transport to phototherapy. Patients benefited from a reduction in topical therapy requirements during phototherapy.

Regarding specific themes, scheduling of phototherapy and logistical issues surrounding this prevailed as a key theme.

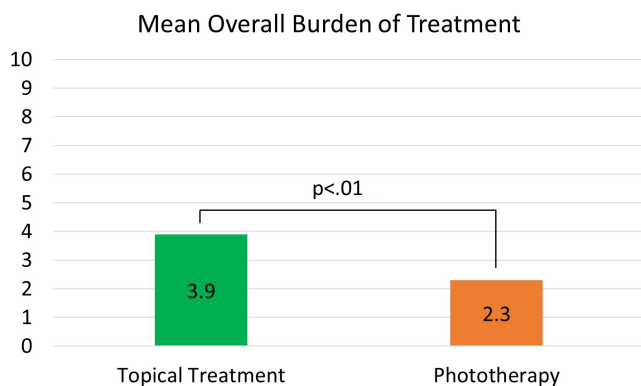
I know three times a week is what they say but I'd love to, in an ideal world, come in like... once a week.

The stresses associated with travelling to and from phototherapy was also described.

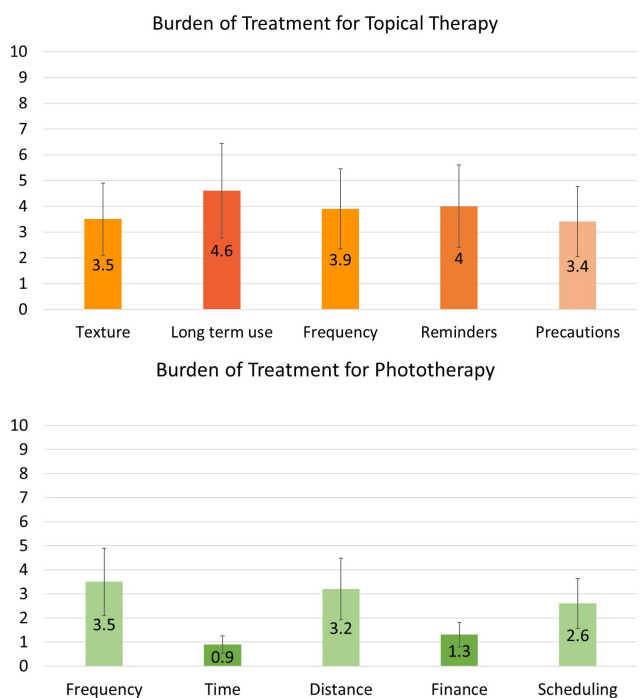
The most stressful piece is actually getting there. Because I work full time, and you are in the constraints of working, and then trying to step out.

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**FIGURE 1** Mean burden of treatment relating to phototherapy (2.3) was lower than that of topical treatment (3.9), *p*-value <.01



**FIGURE 2** Burden of treatment was higher for all components of the topical therapy score than the phototherapy score. For topical treatment, questions related to awkwardness of the texture of topical treatments, the need for ongoing long-term treatment, the frequency of application, the need for reminders to apply treatment and the need to take precautions when using topical therapy. For phototherapy, questions related to the frequency of treatment, the duration of individual sessions, the distance required to travel to the phototherapy department, financial implications of attending for phototherapy and scheduling issues relating to phototherapy

Despite this, the topical-sparing benefits of phototherapy were often reported.

With the creams, when you stopped using them for even 2 days it comes back and... the creams are very oily and messy and yeah, the creams can be a bit of a nightmare.

Finally, patients reported fear of other treatment modalities.

With immunosuppressants I really tried to avoid it. Because the minute I hear impact to your immune system, it's like I switch off because I suppose my mom had an autoimmune disease. And then she had to have the autoimmune therapy. And there was so many side effects with that

This study showed low levels of BOT of UVB, even lower than topical treatment. This suggests that the perceived challenges relating to phototherapy such as frequent attendance, do not outweigh the therapeutic benefits. Patients have described similar 'topical-sparing' benefits for systemic therapy in paediatric atopic dermatitis,<sup>7</sup> and similar BOT related to concerns about topical treatments in vulval lichen sclerosis.<sup>8</sup> The significant benefits and minimal disruption reported in the interviews highlight the relevant role of phototherapy in the dermatological arsenal.

Limitations of this study include the relatively small numbers of patients in the study, the fact that patients who select UVB may be biased against other forms of therapy, and the fact that no patients in the study had previously been on biological therapy for comparison. The opinions of the interviewees may obviously not represent the views of all patients, although data saturation occurred after only eight patients. Strengths include the use of mixed methods for triangulation of data, the range of patients and conditions sampled, the use of a questionnaire validated for broad application and the use of semi-structured interviews.

Our recommendations based on this study and on related literature<sup>3-5</sup> are:

1. To include phototherapy in the range of treatment modalities offered to patients with ultraviolet-sensitive dermatoses
2. To clearly highlight the potential benefits and risks with each potential treatment.
3. To assess patient expectations and preferences prior to initiation of therapy.
4. To consider the hidden impacts of phototherapy, particularly the financial and time costs, which may render it unsavoury for certain patients.

Dermatologists should consider the impact on BOT for all prescribed therapies, and low BOT should be considered as a major benefit of UVB.

**CONFLICT OF INTEREST**




The authors declare that they have no conflict of interest.

**DATA AVAILABILITY STATEMENT**

Data are available on request from the corresponding author.

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