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Economic evaluation of a tailored therapist-guided internet-based cognitive behavioural treatment for patients with psoriasis: a randomized controlled trial

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Dear Editor, The high prevalence and physical, psychological and economic burden of chronic skin conditions emphasize the need for cost-effective multidisciplinary treatment options.[1] Cognitive behavioural therapy (CBT) reduces physical and psychological symptoms in chronic skin conditions,[2] and is increasingly offered online.[3] However, cost-effectiveness studies of internet-based CBT (ICBT) for chronic skin conditions are lacking. In our previous randomized controlled trial (RCT), individually tailored, therapist-guided ICBT improved physical functioning and

decreased disease impact in patients with psoriasis.[4] The current study examines the cost-effectiveness of this intervention.

This economic evaluation from a societal perspective was conducted alongside an open-label parallel-group RCT comparing the effects of care as usual (CAU; regular dermatological care) with additional ICBT aimed at reducing the impact of psoriasis on daily life (ICBT+CAU) in 131 patients with psoriasis. Methodological details are described elsewhere.[4] The ICBT focused on itch, pain, fatigue, negative mood and social relationships. Costs (self-reported health care and medication use, patient travel costs, loss of productivity costs in paid labour and ICBT costs[4]) and effects [quality-adjusted life years (QALYs)[4]] were assessed at baseline, post-treatment and 6-month follow-up. Baseline between-group cost differences were analysed with independent-samples t-tests. An incremental cost–utility ratio (ICUR) was calculated by dividing between-group cost differences by the QALY differences for the 12-month study period. Uncertainty surrounding the ICUR was based on bootstrapped samples (1000 replications).

No baseline between-group differences in sociodemographic and disease-related characteristics, and outcomes were found (P-values $\geq$ 0·10), except for a higher clinician-rated disease severity in the ICBT+CAU group (P = 0·03). The primary cost–utility analysis showed no between-group differences in effects (average QALY ICBT+CAU vs. CAU 0·79 vs. 0·78; mean QALY difference –0·014; 2·5–97·5 percentile –0·062 to 0·038) or costs (average costs ICBT+CAU vs. CAU €6641 vs. €5346; mean difference €1295; 2·5–97·5 percentile –€1502 to €4176) at post-treatment and 6-months follow-up (P $\geq$ 0·45). The northwest quadrant of the cost-effectiveness plane (Fig. 1a) contained the majority of ICURs (58%), suggesting larger societal costs and QALY losses after ICBT+CAU than CAU alone. Greater QALY improvements in the ICBT+CAU group, but at higher societal costs (northeast quadrant), had a 24% probability.

Although the intervention was aimed at patients with moderate-to-high disease burden, the sample had relatively low disease burden.[4] To examine the impact of disease burden, four post hoc subgroup analyses were performed on patients with high vs. low (median split) baseline scores on (i) self-assessed disease severity; (ii) clinician-assessed disease severity; (iii) psychological distress; and (iv) self-perceived disease impact. For patients with high self-reported disease severity and high self-reported disease impact, ICBT+CAU was generally associated with greater effects at lower societal costs than CAU (i.e. 60% and 78% ICURs in the southeast quadrant, respectively, compared with 0% and 0% in low-scoring patients; Fig. 1b–e). The probability that ICBT is cost-effective for patients with high self-reported disease severity and impact at a willingness to pay of €20 000 per QALY gained[5] is 78% (mean ICUR –55·978; mean cost reduction –€593; mean QALY increase 0·05) and 95% (mean ICUR –94·371; mean cost reduction –€2562; mean QALY increase 0·03),

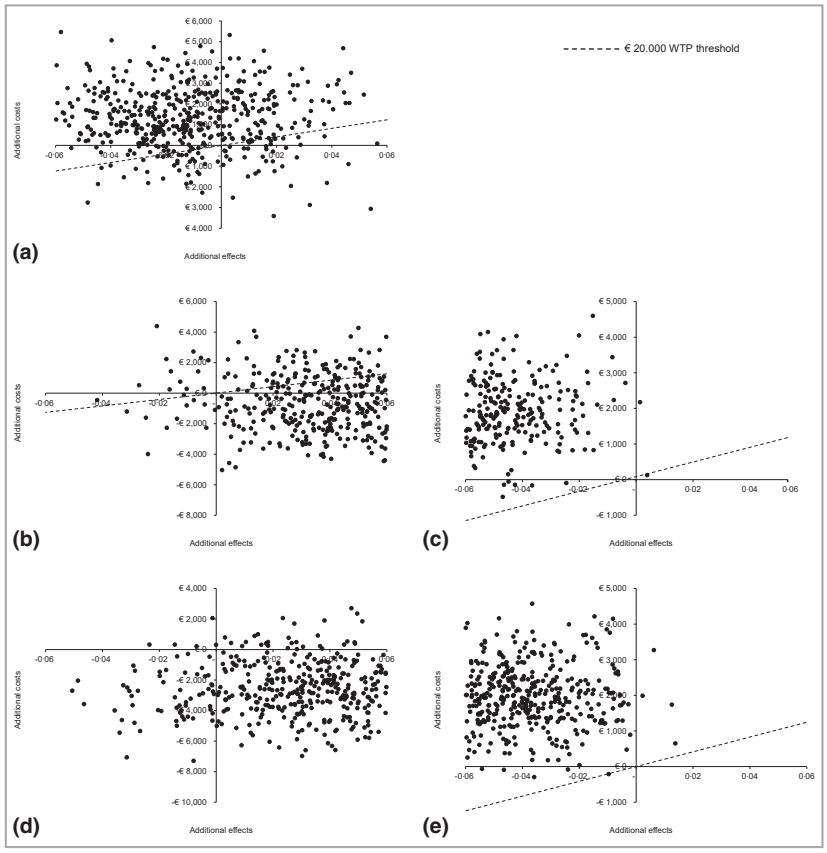

Fig 1. Cost-effectiveness planes for main cost-effectiveness analysis (a), and subgroups of high (b) vs. low (c) self-assessed disease severity, and high (d) vs. low (e) self-assessed disease impact. WTP, willingness to pay.

respectively. In contrast, for patients with high clinician-assessed disease severity and high psychological distress, ICBT+CAU was generally associated with lower effects at higher costs than CAU (86% and 78% of ICURs in the northwest quadrant, respectively, compared with 31% and 4% in low-scoring patients).

That ICBT+CAU was not cost-effective compared with CAU in the total group may be explained by between-group imbalance [i.e. higher disease severity and descriptively higher baseline costs, systemic medication use and greater labour market participation (more possible productivity losses) in the ICBT+CAU group]. Moreover, the generic effect measure (EQ-5D) may not be specific enough to detect health-related quality of life (HRQoL) aspects in dermatological samples,[6] combined with limited responsiveness and ceiling effects across conditions.[7,8]

The finding that ICBT+CAU was cost-effective for patients with high self-reported disease severity and impact clearly suggests the target audience of this intervention. As societal costs were lower in the ICBT+CAU than CAU group at 6-month follow-up, the intervention may be cost-effective even when society is not willing to pay anything for it. However, follow-up trials including patients with higher disease burden are needed to corroborate these findings. Strengths of this study include the RCT design, outpatient sample and analysis of direct and indirect costs. Including a sensitive-to-change dermatology-specific HRQoL measure might aid the assessment of clinically relevant improvement in future cost-effectiveness studies.

In conclusion, although ICBT was not considered cost-effective in comparison with CAU in the overall sample, subgroup analyses suggested cost-effectiveness for patients who experience high self-assessed disease severity and impact. Screening for these characteristics, and offering ICBT specifically to patients with elevated levels, may be cost-effective and clinically relevant.

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