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Janus kinase inhibitors (JAKi) improve sleep in people with atopic dermatitis: a systematic review of randomised clinical trial evidence

Carsten Flohr*[1], Mandy Wan[2, 3], Shona Cameron[1], Desaline Joseph[4], Paul Gringras[4], Charlotte Curtis[5], Catarina Santos[5], Andrew Selfridge[6], Melissa Watkins[6]

[1]Paediatric and Population-Based Dermatology Research, St John's Institute of Dermatology, King's College London and Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom
[2]Evelina London Children's Hospital, Guy's & St Thomas' NHS Foundation Trust, London, United Kingdom
[3]Institute of Pharmaceutical Science, King's College London, London, United Kingdom
[4]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom
[5]Momentum Data Ltd., St. Albans, United Kingdom
[6]Pfizer Inc., New York, United States

Introduction
Sleep disturbance is common in atopic dermatitis (AD) and greatly impacts quality of life. Despite its importance, evidence on effective interventions is limited. We conducted a broad systematic review of interventions, including both topical and systemic therapies, for sleep outcomes in people with AD. This abstract focuses specifically on the results obtained with Janus kinase inhibitors (JAKi). The full review additionally assesses other dermatological, lifestyle, and psychological interventions.

Materials and Methods
This systematic review was registered with PROSPERO (CRD420251071779) and conducted in accordance with PRISMA guidelines. We included English-language randomised controlled trials in children, adolescents, or adults with AD that evaluated pharmacological or non-pharmacological interventions and reported at least one sleep-related outcome. Five electronic databases were searched (inception-2025), supplemented by backward citation screening. Study selection, data extraction, and risk of bias (assessed using the Cochrane Risk of Bias 2 [RoB 2] tool for randomised trials) were independently performed by two reviewers, with sleep outcomes synthesised narratively.

Results
Our searches identified 5,478 records, of which 134 were included. Thirteen unique parallel-design studies assessed JAKi: 11 evaluated systemic JAKi (baricitinib, n=7; abrocitinib, n=2; and upadacitinib, n=2) and two evaluated topical JAKi (ruxolitinib), encompassing a total of 7,135 randomised participants. Comparator arms received placebo or, in topical studies, vehicle cream. Sleep outcomes were assessed using a variety of patient-reported measures, including the sleep component of SCORing Atopic Dermatitis (SCORAD) and the Patient-Oriented Eczema Measure (POEM); Atopic Dermatitis Sleep Scale (ADSS) items 1–3 (difficulty falling asleep, nighttime awakenings, and difficulty returning to sleep); Patient-Reported Outcomes Measurement Information System (PROMIS) sleep items; and the sleep domain of the Atopic Dermatitis Impact Scale (ADerm-IS). Sleep outcomes were heterogenous, and no objective measures (actigraphy or polysomnography) were reported. Across all studies, sleep outcomes were evaluated exclusively as secondary or exploratory outcomes, and only one outcome (in two studies) was judged to have a low risk of bias.

The findings demonstrate that people with AD treated with JAKi had improvements in one or more sleep outcomes

compared with controls. This includes ADSS item 2, the only measure with low risk of bias in two trials, which showed significant improvements in both studies at least for the highest dose tested. Additionally, positive effects were seen in both systemic and topical routes of administration. For instance, in one study, people treated with systemic JAKi experienced up to 14.1-point improvement in daytime functioning after 16 weeks, as measured by PROMIS sleep-related impairment, compared with an 8.3-point improvement in people receiving placebo. In a separate study, people treated with a topical JAKi showed improved outcomes in PROMIS sleep disturbance, with up to 22.3% achieving a ≥6-point improvement versus 9.5% in the control arm after 8 weeks. In two other studies, people treated with a systemic JAKi had significantly higher rates of clinically meaningful improvement in sleep disturbance at 16 weeks — defined as a ≥12-point improvement in ADerm-IS sleep score from a baseline of ≥12 — ranging from 50.2% to 66.1% of responders, compared with 12.4% to 13.2% in the control arms.

Conclusions

JAKi demonstrated meaningful improvements in sleep outcomes, highlighting benefits that extend beyond skin symptom control. Although these trials were primarily designed to assess dermatological outcomes, with sleep outcomes evaluated as secondary, measured heterogeneously, and largely subjective, their sleep-related findings underscore the need for studies specifically designed to confirm and better quantify JAK inhibitors' effects on sleep.