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Optimizing Care Pathways Through Digital Symptom Tracking and Patient-Reported Outcomes

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INTRODUCTION & AIM

Digital symptom tracking and patient-reported outcomes (PRO) are increasingly used to support self-management and remote monitoring in chronic dermatological conditions. However, their role in patient-centred care pathways remains unclear. This review examines the current evidence on digital tools for symptom tracking and PRO collection, highlighting strategies for their integration to optimize clinical workflows, patient engagement, and health outcomes.

METHOD

A literature review was conducted using randomized controlled trials, retrospective app-data analyses, and systematic reviews (2010–2025) evaluating digital symptom-tracking tools for atopic dermatitis, psoriasis, and chronic eczema. Extracted data included study design, population, digital modality, PRO instruments (POEM, DLQI), engagement/adherence metrics, severity indices (SCORAD), QoL outcomes, and usability measures.

RESULTS

Across 30 studies, digital interventions that combined education, medication reminders, symptom tracking, and PRO collection consistently achieved high engagement (≥ 6 days/week active use) and adherence (9 %) with strong user-satisfaction scores (88%). Apps and e-diaries were associated with substantial improvements in PROs such as POEM and DLQI, indicating better self-management and QoL, although effects on objective severity scores were smaller or inconsistent. A 6-week atopic dermatitis program delivered via smartphone achieved(44% improvement in SCORAD and 46% improvement in POEM, alongside marked DLQI gains among highly adherent users. Weekly PRO monitoring itself can act as a behavioral co-intervention, producing small but measurable improvements in perceived eczema severity independent of changes in treatment use. AutoML analyses identified baseline QoL, disease activity, age, BMI, and anxiety as key predictors of symptom trajectories and app usage.

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DISCUSSION

The evidence supports digital symptom-tracking tools and PRO platforms as powerful adjuncts to conventional dermatologic care, particularly for strengthening self-management and improving quality of life, even when effects on objective severity scores are modest or variable. The consistent pattern of benefit across interventions that combine education, medication reminders, and regular PRO capture suggests that closed feedback loops, rather than any single feature, are central to driving behavior change and patient empowerment. At the same time, trials such as EMO indicate that frequent symptom monitoring can itself act as a behavioral co-intervention, implying that outcome assessment schedules must be carefully optimized to avoid unintentionally altering trial effects or routine care. High engagement and adherence—reflected in near-daily app use, high mission and e-diary completion rates, and strong acceptability scores—demonstrate that well-designed tools can be integrated into patients' lives, although older users and heterogeneous app quality highlight the need for co-design, accessibility, and stronger validation frameworks. AutoML analyses further show how baseline QoL, disease activity, age, BMI, and anxiety shape symptom trajectories and app usage, underscoring the potential for data-driven personalization of digital care pathways. However, substantial heterogeneity, risk of bias in individual studies, inconsistent impact on clinician-rated severity, and the lack of standardized PRO infrastructures and regulatory oversight mean that future work must prioritize multicenter validation, harmonized digital outcome sets, and implementation research to ensure these technologies genuinely enhance, rather than complicate, patient-centred care pathways.

CONCLUSION

Digital symptom-tracking platforms and PRO measures have demonstrated feasibility, high user acceptability, and a positive impact on self-management and QoL in dermatology. When thoughtfully integrated, they enable continuous, patient-centred, precision-informed care . Future work should refine monitoring frequency, adopt standardized PRO infrastructures, and leverage advanced analytics to deliver personalized interventions while safeguarding clinical and research integrity.