

Alternative Psychotherapeutic Approaches to the Treatment of Eczema

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Introduction: Patients with eczema suffer from high psychological burden, often caused and exacerbated by chronic pruritus, which leads to a vicious itch-scratch cycle. Although much of the literature focuses on treating the physiological factors that lead to pruritus, little attention has been given to the cognitive, behavioral, and social factors associated with the itch-scratch cycle. We conducted a literature review to investigate whether treatments aimed at psychosocial factors could be effective for patients with eczema.

Methods: A systematic literature review was conducted through PubMed and EMBASE. Original investigative articles that focused on psychotherapeutic interventions for eczema and/or eczema-related psychological morbidities were reviewed.

Results: Psychotherapeutic interventions alongside standard medical care are shown to be beneficial compared to conventional treatments alone, both for eczema and for eczema-associated psychological symptoms. Such interventions include meditation and mindfulness, stress-reduction, habit-reversal training, hypnotherapy, music therapy, massage therapy, and standard psychological treatments such as cognitive behavioral therapy.

Conclusion: It is important to recognize the reciprocal relationship between eczema and psychosocial distress. Alternative treatment options to address psychological factors associated with eczema can improve disease trajectory and quality of life.

Keywords: eczema, atopic dermatitis, psychotherapy, mindfulness, stress-reduction, habit-reversal training, hypnotherapy, music therapy, massage therapy, cognitive behavioral therapy

Introduction

Eczema is the most common inflammatory skin disorder, affecting 7.3% of the US adult population.¹ It is a complex condition that manifests as a result of genetic predispositions, innate and adaptive immune response abnormalities, and environmental triggers.² Patients with eczema have a compromised skin barrier, commonly due to filaggrin gene mutation, which disrupts the body's natural ability to retain moisture and evade allergen and microbe penetration. Consequently, sensitization to allergens and pathogen colonization result in chronically inflamed skin, characterized by pruritus, erythema, and lichenification.² Eczema most often presents during childhood but can persist into adulthood.

One of the predominant features of eczema is chronic pruritus, or itch lasting longer than 6 weeks. Pruritus is not only cited as the most disturbing symptom of eczema but as an exacerbating factor of the disease. Scratching is the method by which patients provide immediate physical and mental relief from pruritus, which reinforces the behavior until it becomes almost automatic or involuntary.³ However, scratching damages the already compromised skin barrier, which worsens inflammation and opens the door for superimposed infections.³ This is often referred to as the vicious itch-scratch cycle of eczema. Moreover, scratching can worsen psychological distress in patients with eczema, as engaging in a knowingly destructive behavior can elicit feelings of anger and low self-esteem.³ The Biopsychosocial Model developed by Verhoeven et al proposes that chronic itch is the manifestation of interacting internal factors (such as personality), external factors (such as environmental stressors), mediating factors (cognitive, behavioral, and social), and physiological factors.⁴ Consequently, a skin disease with a vicious itch-scratch cycle such as eczema may be influenced by an intervention aimed at any one of the above factors. We conducted a literature review to investigate psychotherapeutic options for eczema targeting mediating factors, which include cognitive, behavioral, and social influences.

Methods

A systematic literature search was conducted through PubMed and EMBASE using the search terms “(atopic dermatitis) AND (mindfulness)”, “(atopic dermatitis) AND (psychotherapy)”, “(eczema) AND (mindfulness)”, and “(eczema) AND (psychotherapy)” (Figure 1). We included peer reviewed articles published between 1990 and 2021 written in English. Each article’s content was screened. Original investigative articles that focused on psychotherapeutic interventions for eczema and/or eczema-related psychological morbidities were chosen for further review. Review articles and commentaries were excluded. The chosen articles were organized into seven different categories based on the following primary

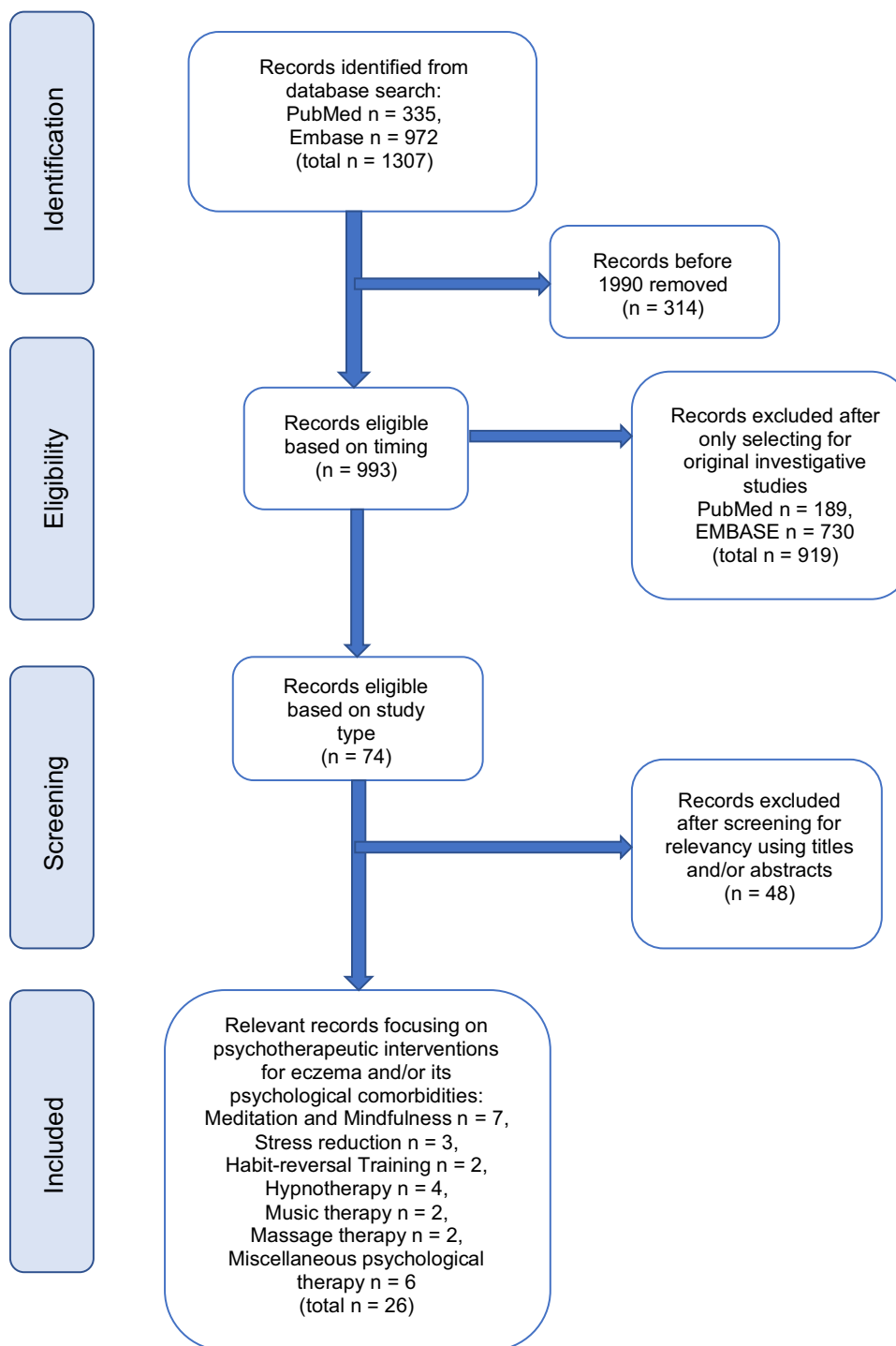


Figure 1 Flowchart of the study selection process.

psychotherapeutic interventions: 1. meditation and mindfulness, 2. stress reduction, 3. habit-reversal training, 4. hypnotherapy, 5. music therapy, 6. massage therapy, and 7. miscellaneous mental health and/or behavior therapy.

Results

We identified 26 articles involving at least one psychotherapeutic intervention and assessed its impact on eczema and/or eczema-associated psychological symptom(s). The summary of the studies is shown in [Tables 1–7](#).

Meditation and Mindfulness

There were seven studies assessing the benefit of meditation and mindfulness for eczema ([Table 1](#)).^{5–11} Mindfulness is the quality of intentionally and non judgmentally paying attention to the present moment.¹² Meditation is a technique through which mindfulness can be expressed. In mindfulness meditations, an individual practices the quality of mindfulness by simply being with the self and monitoring one's internal and external experiences with openness and without any attachments.¹² Mindfulness and meditation are tools to help patients approach their eczema from a different lens.

Table 1 Studies Assessing Meditation and Mindfulness for Eczema

References	Type of Study	Intervention	Outcome(s) for Eczema	Outcome(s) for Eczema-Associated Psychosocial Symptoms
Offenbacher et al ⁵	Prospective, uncontrolled clinical pilot study (N=10)	MBSR Program developed by Jon Kabat-Zinn; 8-week course	-Subjective SCORAD: increased slightly -POEM: decreased	-DLQI: decreased -HADS: slightly increased -PSQ: decreased -FMI: increase in presence and acceptance* -MAAS: increased
Guido et al ⁶	Randomized, controlled clinical trial (N=16 for treatment group, N=11 for control)	-Treatment group: guided meditation during phototherapy sessions -Control group: phototherapy session alone	NA	-DLQI: improvement post-treatment*; observed benefit in treatment group compared to control group -Stress levels: improvement in treatment group* -Attitude toward meditation: 100% of treatment patients expressed desire to continue meditating
Utterstrom et al ⁷	Open, uncontrolled clinical trial (N=9)	Body Balance Relaxation Method; focus on movement, breathing, sound, and color	-Itch intensity: decreased* -Mean % of body surface covered in eczema: decreased -Salivary cortisol: increased*	-Stress level: decreased* -DLQI: no difference
Xie et al ⁸	Randomized, controlled clinical trial (N=58 for treatment group, N=55 for control group)	-Treatment group: Integrative Body-Mind-Spirit sessions; based on traditional Chinese philosophy; Six, 3-hour sessions -Control group: waitlisted to receive treatment	-SCORAD: greater improvement in treatment group compared to pretreatment and control group*	-SCAS: greater improvement in treatment group compared to pretreatment and control group* -ERC: Greater reduction in lability/negativity for treatment group compared to pretreatment and control group* -RSES and CPS: no significant change -CDLQI: improvement in both groups

(Continued)

Table I (Continued).

References	Type of Study	Intervention	Outcome(s) for Eczema	Outcome(s) for Eczema-Associated Psychosocial Symptoms
Huang ⁹	Uncontrolled clinical trial (N=203)	Mind-body control techniques to stop habitual scratch; 6 months	-Skin lesions: dramatic improvement -Topical steroid use: 60% reduction - Oral antihistamine use: 50% reduction	NA
Hedman-Lagerlöf et al ¹⁰	Prospective, uncontrolled clinical trial (N=9)	Exposure-based cognitive behavioral therapy that entailed a mindfulness practice; 10 weeks	-Subjective SCORAD: decreased* -Objective SCORAD: decreased	-BAI: decreased* -MADRS-S, ISI, and QOLI: no significant reduction -CSQ-8: high treatment satisfaction (26.3 on a scale of 32)
Habib et al ¹¹	Randomized, controlled trial (N=9 for treatment group, N=8 for control group)	-Treatment group: psychoeducational program on stress management, awareness, balance, relaxation, guided imagery, and habit reversal, + SMC as needed; 6 weeks -Wait-listed control group: received SMC	-Pruritus (ADAM): reduced for treatment group compared to pretreatment and control* -Global severity (ADAM): reduced for treatment group*	-PANAS 20 mood adjectives: greater reduction in social anxiety for treatment group compared to pretreatment and control* -PBC: reduction for treatment group* -STAXI: extremes normalized for treatment group

Note: *Statistically significant finding.

Abbreviations: MBSR, mindfulness based stress reduction; SCORAD, scoring atopic dermatitis; POEM, patient oriented eczema measure; DLQI, dermatology life quality index; HADS, hospital anxiety and depression scale; PSQ, perceived stress questionnaire; FMI, Freiburg mindfulness inventory; MAAS, mindful attention awareness scale; SCAS, Spence children's anxiety scale; ERC, emotional regulation checklist; RSES, Rosenberg self-esteem scale; CPS, closeness to parents scale; CDLQI, children's dermatology life quality index; BAI, Beck anxiety inventory; MADRS-S, Montgomery-Asberg depression rating scale self-report; ISI, insomnia severity index; QOLI, quality of life inventory; CSQ-8, client satisfaction questionnaire; SMC, standard medical care; ADAM, atopic dermatitis assessment measure; PANAS, positive and negative affect schedule; PBC, private body consciousness; STAXI, state-trait anger expression inventory.

Xie et al utilized an empirically validated Integrated Body-Mind-Spirit (IBMS) program aimed at children with eczema and their parents.⁸ This program was based on Eastern philosophies of health and well-being, which emphasize treating the whole person and the balance between his/her physical, emotional, and spiritual health, in addition to the person's relationship to the wider external environment. In this randomized, controlled clinical trial, the treatment group underwent six 3-hour IBMS sessions while the control group was waitlisted to receive the treatment after the study. After the intervention, there was a statistically significant within-group difference for the treatment group, with Scoring Atopic Dermatitis (SCORAD) scores improving from severe to moderate ($p < 0.001$). There was also a statistically significant improvement in SCORAD in the treatment group compared to the control group ($p < 0.05$). Additionally, the treatment group demonstrated a psychological benefit; anxiety levels (based on the Spence Children's Anxiety Scale) were statistically significantly decreased at 5 week follow-up compared to pretreatment ($p < 0.001$) and compared to the control group ($p < 0.05$).

Another randomized, controlled trial by Habib et al displayed similar success.¹¹ The treatment group underwent 6 weeks of a psychoeducational stress management program that included practicing awareness, self-monitoring, control, and relaxation in addition to standard medical therapy; the control group received standard medical therapy alone. After the intervention, subjective ratings of pruritus were statistically significantly reduced for the treatment group compared to the control group, and they remained so at 8 week follow-up ($p = 0.0022$). There was also a statistically significant within-group decrease in the objective global severity of AD for those that underwent treatment ($p = 0.0339$). Lastly, the treatment group displayed a statistically significant reduction in social anxiety compared to the control group ($p = 0.0092$).

Table 2 Studies Assessing Stress Reduction for Eczema

References	Type of Study	Intervention	Outcome(s) for Eczema	Outcome(s) for Eczema-Associated Psychosocial Symptoms
Ehlers et al ¹³	Randomized, controlled clinical trial (N= 113 divided amongst the treatment groups, N=24 for control group)	-4 treatment groups: Dermatologic Education (DE), Autogenic Training (AT) for relaxation, CBT (BT), and combined DE-BT; received SMC if needed; 12 weekly group sessions of 1.5–2h -Control group: SMC	-Severity of skin lesions by a dermatologist (erythema, excoriations, and dryness): all treatment groups improved in all assessments compared to pretreatment and SMC* -Ratings of itch and scratching: BT and DEBT improved compared to SMC* -Topical steroid use: reduction in DEBT compared to DE and SMC*	-Eczema related distress: all treatment groups superior to SMC* -Global disability rating: psychological and combined treatments (AT, BT, and DEBT) superior to SMC* -Itch-Related Cognition Questionnaire: all treatment groups except DE improved* -STAI and CES-D: reductions for AT and DEBT compared to SMC*
Bae et al ¹⁴	Randomized, controlled clinical trial (N=15 for treatment group, N=10 for control group)	-Treatment group: both physical and mental PMR, in addition to SMC; 1 month -Control group: received only SMC	-EASI: both groups improved similarly -Pruritus and loss of sleep VAS: improved in PMR group compared to control* -Serum levels: IL-13 was positively correlated with NPY, and NPY was inversely correlated with STAI; no change in levels after treatment	-BDI and IAS: improvement in PMR group only* -STAI: positively correlated with pruritus in all patients; improved in PMR group only*
Weber et al ¹⁵	Randomized, controlled clinical trial (N=18 for treatment group, N=18 for control group)	-Treatment group: children underwent relaxational, educational, and playful activities led by a psychiatrist; 90 minute sessions for 6 months; their parents underwent discussions and journaling sessions led by dermatologists; 6 months -Control group: waitlisted for the treatment	-Pruritus: improvement in pattern (from daily to weekly pruritus) and impact it has on mood for treatment group*	-CDLQI: improvement in treatment group compared to controls* -FDI: no change

Note: *Statistically significant finding.

Abbreviations: SMC, standard medical care; STAI, state-trait anxiety inventory; CES-D, center for epidemiological studies depression scale; PMR, progressive muscle relaxation; EASI, eczema area and severity index; VAS, visual analogue scale; BDI, Beck depression inventory; IAS, interaction anxiousness scale; STAI, state-trait anxiety inventory; CDLQI, children's dermatology life quality index; FDI, family dermatitis impact.

Stress Reduction

There were three studies assessing the benefit of stress reduction for eczema (Table 2).^{13–15} Methods of stress reduction involve mental and/or physical relaxation. In autogenic training (AT), patients focus on a specific part of their body and say autosuggestions, such as “I am calm and relaxed”, “the itch dissolves”, or “my skin feels cool”.¹³ Another method is cognitive behavioral therapy that emphasizes relaxation.¹³ Progressive muscle relaxation (PMR) training is a more physically involved method of inducing either physical or mental relaxation.¹⁴ The physical component involves tensing and relaxing various muscle groups for a certain amount of time, while the mental component involves focusing on the sensations of tension and relaxation.¹⁴ Regardless of the method used, clinical psychologists often provide the sessions, and patients are subsequently encouraged to continue the practice on their own using guided audio or video recordings.

Table 3 Studies Assessing Habit-Reversal Training for Eczema

References	Type of Study	Intervention	Outcome(s) for Eczema	Outcome(s) for Eczema-Associated Psychosocial Symptoms
Noren et al ³	Randomized, single-blind, controlled clinical trial (N=18 for treatment group, N=21 for control group)	-Treatment group: habit reversal training + topical mometasone with instructions to periodically stop mometasone; 8 weeks -Control group: topical mometasone only	-Objective SCORAD: higher mean change for treatment group* -Subjective SCORAD: both groups improved* -Frequency of scratching episodes, skin status assessment, and itch estimation improved in both groups*	-CDLQI: improvement in both groups*
Anderson ¹⁶	Single Case Study (N=1)	-Online habit reversal training program; 4 weeks	-Self-severity eczema score: reduced from 4 to 1	-DLQI: reduction after treatment (from 18 to 4)

Note: *Statistically significant finding.

Abbreviations: SCORAD, scoring atopic dermatitis; CDLQI, children's dermatology life quality index; DLQI, dermatology life quality index.

Ehlers et al performed a randomized controlled trial in order to assess if stress reduction therapy could improve outcomes for patients with eczema.¹³ The study involved one control group receiving standard medical care (SMC) and four treatment groups, which included Dermatologic Education (DE), AT, Cognitive Behavioral Therapy (BT) aimed at stress-reduction, and a combined DEBT group for 12 weekly group sessions, each lasting 1.5–2 hours. The four treatment groups could also use SMC as needed. Compared to pretreatment, all treatment groups displayed statistically significant improvement in the severity of skin lesions ($p < 0.005$) and were superior to SMC ($p < 0.001$ for AT and DEBT; $p < 0.01$ for BT and DE). For eczema-associated distress, all treatment groups showed statistically greater improvement than the SMC

Table 4 Studies Assessing Hypnotherapy for Eczema

References	Type of Study	Intervention	Outcome(s) for Eczema	Outcome(s) for Eczema-Associated Psychosocial Symptoms
Stewart et al ¹⁷	Prospective, uncontrolled clinical trial (N=38; 18 adults, 20 children)	Adults: hypnotherapy for non-scratching behavior and skin cooling suggestions + instructions for self-hypnosis; between 2–7 months with weekly then monthly sessions -Children: "magic music" for relaxation, stress reduction, ego strengthening, and skin comfort	-Adults assessment of itch, scratch, sleep, and tension (0–10 analogue scale): all parameters improved* -Children (child and parent questionnaires involving itching, scratching, and sleep disturbance): improved in all parameters -Topical steroid use decreased by 40% at 4 weeks, 50% at 8 weeks, and 60% at 16 weeks	-Child's mood via parent questionnaires: marked improvement
Delaitre et al ¹⁸	Prospective, uncontrolled clinical trial (N=27)	-Hypnosis: performed by a trained physician; 2–16 sessions, 20 minute each	-EASI: improved* -Self-assessments of eczema: 26 out of 27 patients reported their eczema as either improved, almost cured, or cured	NA

(Continued)

Table 4 (Continued).

References	Type of Study	Intervention	Outcome(s) for Eczema	Outcome(s) for Eczema-Associated Psychosocial Symptoms
Hajek et al ¹⁹	Prospective, controlled clinical trial (N=27 for treatment group, N=10 for control group)	-Treatment group: hypnosis + cutaneous pain threshold measurements (10/session); 10 1-hour sessions, 3 times weekly for patients with eczema and healthy patient groups -Control group: cutaneous pain threshold measurements; no hypnosis	-Cutaneous pain threshold: Increase for all patients in treatment group; the increase was more pronounced for eczema patients and was correlated with symptom improvement; no change for controls	NA
Derrick et al ²⁰	Prospective, uncontrolled clinical trial (N=11)	-Guided imagery and self-hypnosis, taught by a psychiatrist	-Assessment of eczema by doctor using a scale of 0–3 (0 = absent, 1 = mild, 2 = moderate, 3 = severe) for six factors: dryness, lichenification, crusting, erythema, excoriations and extent of body involved; maximum score of 18: total mean score improved during the whole study, from 10.23 at visit 1 to 7.45 at visit 6	NA

Note: *Statistically significant finding.

Abbreviation: EASI, eczema area and severity index.

group (DE, $p<0.01$; AT, $p<0.05$; BT, $p<0.05$, DEBT, $p<0.01$). For the Global Disability Rating, psychological and combined treatments were statistically significantly superior to SMC (AT, $p<0.01$; BT, $p<0.05$; DEBT, $p=0.001$).

Bae et al performed a randomized, controlled trial to validate the benefit of PMR for patients with eczema.¹⁴ Patients in the control group received conventional treatment, such as topical emollients and corticosteroids, while those in the PMR group received one month of both physical and mental components of PMR. Both groups demonstrated a statistically significant reduction in the clinical severity of eczema using the Eczema Area Severity (EASI) index. The Visual Analogue Scales (VAS) for pruritus and loss of sleep were statistically significantly improved in the PMR group ($p=0.001$ and $p=0.007$, respectively), but not in the control group. Psychological parameters measured by Beck's Depression Inventory (BDI) and State-Trait Anxiety Index (STAI) were statistically significantly improved in the PMR group, but not in the control group ($p=0.016$ and $p=0.04$, respectively).

Habit-Reversal Training

There were two studies assessing the benefit of habit-reversal training (HRT) for eczema (Table 3).^{3,16} HRT firstly requires an agreement that the habit needs changing and making an effort to be consciously aware of the behavior.³ Reversing the habit of scratching involves replacing the behavior with a less noxious one, such as clenching the fists for 30 seconds, followed by pressing on or pinching the itchy area until the itching ceases; another method used to keep patients' hands busy is using a stress relief ball during scratch-triggering activities.^{3,16} Each time patients undergo this new behavior in place of scratching, they should receive some form of positive reinforcement.³

In a randomized, controlled clinical trial by Norén et al, patients were divided into two groups: a control group receiving topical mometasone therapy and an intervention group receiving HRT for 8 weeks in addition to instructions on when to periodically start and stop topical mometasone therapy.³ Conversely, the control group was instructed to continue using topical steroids as guided by their prior experiences using them. After the treatment and at 8 week follow up, there

Table 5 Studies Assessing Music Therapy for Eczema

References	Type of Study	Intervention	Outcome(s) for Eczema	Outcome(s) for Eczema-Associated Psychosocial Symptoms
Demirtas et al ²¹	Randomized, controlled clinical trial (N=25 for treatment group, N=25 for control group)	-Treatment group: "U sequence" music played through headphones with patient lying in a dark room at the beginning of hospital stay -Control group: emollients applied to entire body	-Pruritus intensity using the Numerical Rating Scale (0–10): decreased more for treatment group compared to control group*	-STAI: both groups decreased -Global impression of change: 64% of patients receiving the treatment reported feeling an improvement, 91% would recommend music therapy and 64% would like to continue music therapy.
Kimata ²²	Randomized, double blind clinical trial (All patients had moderate AD determined by SCORAD and were allergic to latex as determined by positive skin-prick test and positive latex-specific serum IgE) (N=25 for Beethoven group, N=25 for Mozart group)	-Beethoven group: listened to Symphony No. 6 Op. 68 Pastoral 1st mov.: Allegro ma non troppo, "Für Elise", and Symphony No. 5 Op. 67 2nd mov.: Andante con moto through a stereo in a small room for 30 minutes -Mozart group: listened to Piano Sonata No. 11 K. 33 I, and Piano Concerto No. 21 K. 567 2nd mov. through a stereo in a small room for 30 minutes	-Skin wheal responses: reduced for Mozart group*; no change after listening to Beethoven -Cytokine production via peripheral blood mononuclear cell samples cultured with IL-4, IL-10, anti-CD40 mAb and latex allergen for 14 days; also cultured with latex allergen for 5 days: Mozart decreased IL-4, IL-10, and IL-13, and increased production of IFN-gamma and IL-12*; no change in Beethoven group -Total IgE and latex-specific IgE: reduced in Mozart group*; no change for Beethoven group	-I-item rating scale: reduced for Mozart group*; no change for Beethoven group

Note: *Statistically significant finding.

Abbreviation: STAI, state-trait anxiety inventory.

was a statistically greater mean improvement in the SCORAD in the treatment group compared to the control group ($p=0.027$ and $p=0.0038$, respectively).

A single case study by Valerie Anderson utilized an online HRT program lasting 4 weeks in a 28-year-old patient with severe eczema recalcitrant to topical and oral medication.¹⁶ The patient also suffered from internalized frustration and disappointment due to his scratching behaviors that reportedly occurred regardless of whether or not he felt itchy. After the online program, his self-severity eczema score decreased from 4 to 1, and his Dermatology Life Quality Index (DLQI) reduced from 18 to 4.

Hypnotherapy

There were four studies assessing the benefit of hypnotherapy for eczema (Table 4).^{17–20} Hypnotherapy involves guiding a patient into a trance, or an altered state of consciousness, in which greater access to the subconscious is achieved.¹⁷ In this state, patients are more receptive to suggestions, which are defined as ideas offered to the subject for uncritical acceptance.¹⁷ In terms of treating eczema, suggestions that a person's skin will become "cool and comfortable" may be

Table 6 Studies Assessing Massage Therapy for Eczema

References	Type of Study	Intervention	Outcome(s) for Eczema	Outcome(s) for Eczema-Associated Psychosocial Symptoms
Schachner et al ²³	Controlled clinical trial (N=10 for treatment group, N=10 for control group)	-Treatment group: 20 minute massage daily + SMC -Control group: SMC	-Focal area assessments in redness, lichenification, scaling, excoriation, and pruritus (by a dermatologist): all measures improved for the treatment group*; scaling improved in the control group* -Global area assessments in redness, lichenification, scaling, excoriation, and pruritus (by a dermatologist): scaling and excoriation improved for the treatment group*; scaling improved for the control group*	-Parent STAI: significantly decreased in treatment group -Parent: Coping Index and How I Feel About My Child Index both improved in treatment group*; Tactile Defensiveness Scale had an observed decreased for the treatment group -Child Behavior Observation: treatment group's mood and activity levels improved; anxiety decreased
Anderson ²⁴	Randomized, controlled clinical trial (N=8 for massage therapy with essential oils, N=8 for massage without essential oils)	-Massage therapy with essential oils by massage therapist weekly then by patient's mother daily; all children bathed daily with essential oils -Massage group without essential oils: same as above (massage + bathing) but no essential oils in bath	-Day-time irritation scores: decreased for both groups* -Night-time disturbance: decreased for both groups*; further treatment for the essential oil group showed an increase compared to pretreatment* -General Improvement Scores (based on overall appearance of body, reddening, and amount of scratching); assessed by child's PCP, mother, and massage therapist: no difference between groups	NA

Note: *Statistically significant finding.

Abbreviations: SMC, standard medical care; STAI, state-trait anxiety inventory.

more effectively accepted as true by the patient. Hypnosis is typically performed by a trained physician, but patients can also be provided with guided audio recordings to complete in a safe place on their own.¹⁷

In one controlled clinical trial by Hájek et al, patients with eczema were compared to healthy controls in cutaneous pain threshold measurements that were performed within a series of 10 hypnotic sessions.¹⁹ Both groups displayed an increase in the cutaneous pain threshold, but the change was more pronounced for patients with eczema. Moreover, the

Table 7 Studies Assessing Miscellaneous Psychotherapeutic Interventions for Eczema

References	Type of Study	Intervention	Outcome(s) for Eczema	Outcome(s) for Eczema-Associated Psychosocial Symptoms
Linnet et al ²⁵	Randomized, controlled clinical trial (N=16 for treatment group, N=16 for control group)	-Treatment group: dynamic psychotherapy + SMC -Control group: SMC only	-Objective SCORAD: no significant difference pre and post-treatment High trait anxiety was a predictor for SCORAD improvement*	-STAI: no significant difference for pre and post-treatment High trait anxiety was a predictor for STAI improvement*

(Continued)

Table 7 (Continued).

References	Type of Study	Intervention	Outcome(s) for Eczema	Outcome(s) for Eczema-Associated Psychosocial Symptoms
Fieten et al ²⁶	Prospective, uncontrolled clinical trial (N=74)	-Personalized Integrative Multidisciplinary (PIM) treatment program that addressed eczema, mental health, and general well-being (team included a dermatologist and psychologist); 6 weeks	SAEASI (and CDLQI): 77% of children experienced a 75% reduction in disease activity and/or improved CDLQI after PIM; of those children: 53% demonstrated both improved disease activity and QoL, 10% of children demonstrated improved disease activity but not QoL, and 37% children experienced impact on quality of life but <75% reduced disease activity	-CDLQI: (see previous column) -Mothers of PIM responders had better disease acceptance, lower general anxiety, and better psychosomatic wellbeing
Evers et al ²⁷	Prospective, controlled clinical trial (N=61 for treatment group, N=30 for control group)	-Treatment group: multidisciplinary program involving cognitive-behavior methods, relaxation, coping skills, and habit reversal; four sessions -Control group: waitlisted to receive treatment	-EASI: improved in treatment group compared to pretreatment and controls* -Skin status, itch, and scratch response from ISDL: all improved in the treatment group compared to pretreatment and control*	-Itch coping patterns: improvement in treatment group compared to pretreatment and controls* -Health-related QoL: improved in treatment group compared to pretreatment -Illness Cognition: improvement in treatment group compared to pretreatment and controls*
Wittkowski et al ²⁸	Single-case multiple baseline across subjects design (N=2)	-Cognitive behavioral therapy; 8 weekly, 60 minute sessions	-Self-rated eczema severity: no significant improvement	-DLQI improved -HADS: slight decrease -SEQ: decrease*
Jafferany et al ²⁹	Prospective, controlled clinical trial (N=16 for treatment group, N=15 for control group)	-Treatment group: family seminar to help patients cope with trauma and to decrease stress; 4, 7-hour sessions; \pm topical emollients -Control group: topical emollients only	-Itch intensity, frequency, and excoriation intensity (assessed via Electronic Calculator of Chronic Pruritus): lower levels in treatment group* -SCORAD: improvement in treatment group compared to pretreatment and controls*; remission of AD at visit 6 in intervention group	-Itch's impact on social life, behavior, attention, work capacity, sex life, and emotions (assessed via Electronic Calculator of Chronic Pruritus): treatment group improved in all parameters compared to control group*
Stein et al ³⁰	Single Case Study (N=1)	-Multimodal program of psychodynamic therapy, CBT, meditation, hypnosis, imagery, aromatherapy, drawing, and biofeedback; 9 sessions over 4 months	-Wong-Baker FACES Pain rating scale: decreased* -Itch Man Scale: decreased* -Parent diary of child's pain and itch: fewer lesions and less bleeding episodes by the 4th month with almost complete skin clearance	-Parent diary of child feelings and behaviors: decreased child anxiety; increased confidence -Therapist remarks: decreased anxiety at bedtime; demonstrated more smiling and pride in her clearing skin; when asked to draw a picture of herself, she drew a princess next to a 'sparkly, magic waterfall'

Note: *Statistically significant finding.

Abbreviations: SMC, standard medical care; SCORAD, scoring atopic dermatitis; STAI, state-trait anxiety inventory; SAEASI, self-administered eczema and severity index; CDLQI, children's dermatology life quality index; EASI, eczema area and severity index; ISDL, impact of chronic disease on daily life; DLQI, dermatology life quality index; HADS, hospital anxiety and depression scale; SEQ, stigmatization and eczema questionnaire.

increase in the cutaneous pain threshold in the patients with eczema was associated with symptom improvement, and both these effects correlated with hypnability of the subject ($r=0.8$).

Another study by Stewart et al sought to assess the benefit of hypnotherapy for both adults and children with AD.¹⁷ Adults underwent anywhere from 2–7 weeks of hypnotherapy sessions that included suggestions of non-scratching behavior and skin comfort/coolness. At the end of the study, patient ratings for itch, scratch, sleep, and tension all statistically significantly improved and remained improved for up to 2 years later ($p<0.01$). Additionally, use of topical steroids in adults showed a 50% decrease by 8 weeks and a 60% decrease by 16 weeks. In children, the treatment was called “magic music”, which was a nightly audio recording involving suggestions for relaxation, ego strengthening, and skin comfort. Dermatologist assessments of eczema activity, as well as parent/child questionnaires assessing itching, scratching, sleep disturbances, and mood, all improved immediately after the treatment and 2 months later.

Music Therapy

There were two studies assessing the benefit of music therapy for eczema (Table 5).^{21,22} The most well-studied technique of music therapy for patients with chronic pain or pruritus involves the U sequence, in which the flow of music follows the shape of the letter U.²¹ The descending arm of the U is characterized by a reduction in tempo, orchestral size, frequency, and volume.²¹ The bottom, flat portion of the U is characterized by relaxing stability, and the ascending arm of the U is re-dynamizing.²¹ The music played can be individualized based on each patient’s music taste.²¹ Patients are typically lying down alone in a dimly lit or dark room with music playing for over 20 minutes.^{21,22}

In one randomized, controlled trial by Demirtas et al, adult inpatients with a chronic, pruritic skin disease, primarily eczema, were divided into two groups, music intervention group (treatment) and emollient group (control).²¹ At the beginning of patients’ hospital stays, the treatment group listened to individualized music following the U sequence through headphones as they laid in a dark room for 20 minutes. The control group had emollients applied to their entire body instead. After one hour, the treatment group reported a statistically significant reduction in pruritus intensity compared to the control group ($p<0.05$). Both groups demonstrated a similar decrease in anxiety levels (STAI). Of the patients in the music therapy group, 64% reported feeling an improvement and a desire to continue music therapy, and 91% would recommend the therapy to others who suffer from chronic pruritus.

Hajime Kimata performed a randomized, double blind clinical trial to assess if listening to different musical composers would differently affect allergic responses in patients with moderate eczema.²² All patients were determined to be allergic to latex by positive skin-prick test and positive latex-specific serum IgE. The patients were divided into two groups, one group that listened to Beethoven and another that listened to Mozart. Both groups listened to the music through stereo speakers in a small room for 30 minutes. Skin prick testing (with latex, histamine, and a control solution) demonstrated a statistically significant decrease in skin wheal response induced by latex in the group that listened to Mozart ($p<0.001$), but not for the Beethoven group. Peripheral blood mononuclear cell samples cultured with latex allergen for 5 days revealed a statistically significant decrease in the production of Th-2 type cytokines (IL-4, IL-10, and IL-13) and a statistically significant increase in Th-1 type cytokines (IFN- γ and IL-12) in the Mozart group ($p<0.001$); listening to Beethoven had no such effect. Additionally, total IgE and latex specific IgE were measured after blood samples were cultured with IL-4, IL-10, anti-CD40 mAb, and latex allergen for 14 days; levels did not change in the Beethoven group, but both were statistically significantly reduced in the Mozart group ($p<0.001$). The last victory for Mozart over Beethoven lies in the psychological parameter—in a one-item stress rating scale, a statistically significant reduction was measured for the Mozart group ($p<0.001$), while there was no change for those who listened to Beethoven.

Massage Therapy

There were two studies that assess the benefit of massage therapy for eczema (Table 6).^{23,24} In massage therapy, a licensed massage therapist often demonstrates the first few sessions so that the patient’s care provider can subsequently perform the technique at home.²³ Massage can either be done in short (10 minute), daily sessions when done at home, or in longer, weekly sessions when performed by a licensed massage therapist. The exact technique of the massage varies, but it is often broken down based on the region of the body massaged and the directionality of the strokes.²³

In a controlled clinical trial by Schachner et al, children were divided into two groups, a control group that received SMC (emollients and topical steroids) and a treatment group that received massage therapy in addition to SMC.²³ A massage therapist demonstrated a 20 minute massage on the child, and then the parents performed it daily for one month. The treatment group demonstrated a statistically significant improvement in all dermatologist-assessed measures of focal eczema lesions (redness, $p<0.001$; lichenification, $p<0.05$; scaling, $p<0.05$; excoriation, $p<0.01$; pruritus, $p<0.05$). Only scaling also statistically significantly improved for the control group ($p<0.05$). For the global skin assessment by dermatologists, scaling and excoriation statistically significantly improved for the treatment group whereas only scaling statistically significantly improved for the control group ($p<0.05$). Parent-rated psychological parameters showed statistically significant improvement in child anxiety ($p<0.01$) and stability (via the Coping Index) ($p<0.05$) and in the How I Feel About My Child Scale ($p<0.05$) for only the treatment group. For the Behavior Observation Scale, which was measured by researchers blinded to the study hypothesis and child groups, only children in the treatment group displayed a statistically significant improvement, specifically in mood, activity level, and anxiety ($p<0.05$). Lastly, only in the treatment group did the parents' own STAI statistically significantly improve ($p<0.05$).

Miscellaneous Psychotherapeutic Interventions for Eczema

There were six studies that assessed miscellaneous therapies to improve mental health and behavior in people with eczema (Table 7), including standard psychological treatments, such as cognitive behavioral therapy, psychotherapy, and a constellation of psychological treatments.^{25–30}

Evers et al performed a prospective, controlled clinical trial testing the benefit of a constellation of psychological treatments for patients with eczema.²⁷ The treatment group received a program of cognitive behavioral therapy, relaxation, development of coping skills, and HRT for 4 sessions, while the controls were waitlisted for the program. After treatment and at 12 month follow-up, all eczema and eczema-associated psychological outcomes were statistically significantly improved in the treatment group compared to the control group ($p<0.05$).

Linnet et al performed a randomized, controlled trial to assess the benefit of dynamic psychotherapy for patients with eczema.²⁵ The treatment group underwent dynamic psychotherapy that focused on illness perception for 6 months in addition to SMC while the control group only received SMC. There were no significant differences in objective SCORAD, STAI, or treatment adherence between the groups before and after treatment. However, the authors found that an initial high trait anxiety created an attrition bias for treatment adherence, such that those in the control group with high initial anxiety were statistically significantly more likely to discontinue treatment ($p<0.05$). They also found that an initial high state anxiety was a statistically significant predictor for improvement in STAI and objective SCORAD for those that received psychotherapy ($p<0.05$), accounting for 27% of the variance in STAI scores and 76% of the variance in objective SCORAD.

Discussion

The psychosocial burden in patients with eczema is high and is dependent on the level of pruritus.^{25,31} A survey-based study comprised of 4744 adolescents from the general Norwegian population found that those suffering from chronic pruritus are significantly more likely to experience suicidal ideation compared to the general population, and they experience it at an equal magnitude to those suffering from chronic pain.³² The relationship between eczema and psychological symptoms is not one-sided, as heightened stress is identified by more than half of patients as a trigger for an eczema exacerbation.³¹ In addition to the pathophysiological effects of stress, psychosocial burdens impact the way in which patients interact with their diseases and the therapeutic options presented to them.

A comprehensive review of the literature demonstrates that psychotherapeutic interventions can be beneficial, both physically and mentally, for patients with eczema. Itch catastrophizing, a debilitating feature of the disease, is negatively correlated with mindfulness scores.³³ Thus, implementing holistic, Eastern medicine practices successfully improves outcomes in patients with eczema.⁸ Similarly, as stress and eczema reciprocally worsen each other, treatment plans involving stress-reduction are superior to those that do not.¹³ Stress reduction and mindfulness can also be combined to improve itch intensity and associated emotional distress.⁷ Music therapy, in addition to relieving pruritus, results in patient-perceived improvement in eczema, which can restore hope and encouragement in patients' efforts toward

healing.²¹ Massage therapy, the experience of relaxing skin-to-skin contact, may aid in the sensitization and aversion to touch that many children with eczema endure.²³ Lastly, traditional psychological therapies can be added to the above interventions. For example, meditation, hypnosis, imagery, and art can be effectively combined with psychodynamic and CBT.³⁰

The mechanisms by which the above therapies are helpful for patients are complex, as are the biological processes that lead to chronic pruritus. For instance, hypnotherapy has been shown to help patients by means of decreasing cutaneous sensitivity, and music therapy has been shown to decrease serum cortisol and inflammatory cells counts.^{19,21} These biological processes, and their relevancy to the skin, are explained in what is called the neuro-immuno-cutaneous-endocrine (NICE) system.³⁴ NICE describes the skin as an active neuro-immuno-endocrine interface, rather than a static organ, that maintains homeostasis via multidirectional communication with NICE organ systems.³⁴ This framework may provide the underlying reasons why the aforementioned therapies could impact the course of eczema in a patient's life. Patients with eczema have overactive sympathetic nervous systems, both in stressful and non-stressful settings.³⁵ Sympathetic system dysfunction, via the release of acetylcholine (ACh) from cutaneous autonomic nerve fibers, triggers pruritus.³⁶ ACh activates muscarinic receptors on keratinocytes, and an intradermal injection of ACh has been shown to provoke a primarily pruritic response in atopic lesions compared to pain in normal skin.³⁶ Conversely, increasing vagal tone inhibits experimentally-induced pruritus via a histamine-independent mechanism.³⁵ Patients with eczema, however, display rigidity in their parasympathetic responses. This limits their bodies' inhibition of pruritus and adaptability to stressful situations.³⁵ Moreover, parasympathetic dysfunction decreases patients' responses to anti-inflammatory medications.³⁷ This suggests that not only does autonomic dysfunction exacerbate the sensation of pruritus, it might also limit an individual's response to treatment efforts. Training patients with eczema in mindfulness-based or other stress-reducing strategies may curb their sympathetic overdrive, resulting in more harmonious autonomic activity in the skin and improved responses to SMC.

Although there are many adjunctive psychotherapeutic modalities available for patients with eczema, the implementation of such techniques requires a certain level of discretion from the provider. Although psychological therapy does not need to be distributed to all patients, failing to offer it to select patients may worsen outcomes, for example, by decreasing compliance to SMC.²⁵ Furthermore, mindfulness can result in people experiencing a shift toward re-perceiving uncomfortable internal and external states prior to the transformation of those states. As individuals with eczema experience high levels of physical and emotional discomfort, mindfulness may result in an enhanced awareness of those happenings. One protective measure for such patients could be hypnotherapy, in which repressed thoughts can be accessed in a controlled environment and provide real-time substance for therapy.¹⁷

Ultimately, the benefit of psychotherapeutic interventions for eczema and its psychological comorbidities is a flourishing, though incomplete, area of research. One limitation of our review is that some of the interventions mentioned have very few trials assessing their validity. On the other hand, the validity of such treatments may be underestimated in the literature. Moreover, standardized guidance on how to identify candidates for these treatments does not currently exist, nor do the means by which these methods can be administered. Research is needed as to how psychological therapy can be tactfully allocated and readily available avenues to care. The lack of standardized guidance may serve as a potential barrier to offering these treatments to patients, and this may be detrimental to patient acceptance of SMC and the extent to which they can experience an enhanced quality of life.

Conclusions

A review of the current literature demonstrates that there are several promising psychotherapeutic interventions for eczema and eczema-associated psychological symptoms. The interaction between eczema and mental health is complex and reciprocal. Providers should consider incorporating alternative, psychologically therapeutic avenues into a patient's treatment plan to improve their symptoms. Further research is needed to better explore such interventions and to properly guide clinicians on when and how to implement them.

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