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REVIEW ARTICLE

# Psychological Interventions in the Treatment of Chronic Itch

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**Patients with chronic itch suffer from higher levels of depression and anxiety than their healthy counterparts. Furthermore, psychological factors, such as stress, are known to aggravate itch. The mere act of thinking about itching can induce the sensation. Interventions like habit reversal training and arousal reduction have been shown to have positive effects on itch relief. Yet, there is still limited data on the psychological management to control the itch scratch cycle and a description of methods suitable to address itch. In this review, we describe different psychological interventions shown to be effective in the treatment of chronic itch. We also provide suggestions based on our experience of suitable interventions for patients with different types of itch.** ***Key words: chronic itch; habit reversal training; arousal reduction; cognitive restructuring; acceptance and commitment therapy; mindfulness-based stress reduction.***

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Quality of life (QoL) is an important parameter that must be considered when assessing the impact of pruritus. Numerous studies demonstrated that patients suffering from skin diseases accompanied with chronic itch have reductions in QoL measures (1–7). Rapp and colleagues (8) demonstrated that patients with psoriasis and eczema have comparable impairments in health-related QoL measures as patients suffering from cancer, heart disease, arthritis, hypertension, depression, and diabetes. Patients with chronic itch report feeling embarrassed and stigmatized due to their skin lesions and have a more negative body image compared to healthy controls (9–12). Prior studies have consistently demonstrated that anxiety and depression are frequent psychological comorbidities of itch-related dermatoses (13–16). The literature thus indicates the negative impact of itch on the lives of patients.

Besides the negative consequences of chronic itch, there are additionally psychological factors that worsen or trigger itch. The biopsychosocial model of chronic itch takes into consideration these psychological factors (17). Daily hassles, perceived stress, negative life events, as well as certain personality traits, have all been shown to be associated with the intensity of itch, not only in the general population, but also in patients with itch-related dermatoses (18–22).

As such, it follows that the adequate treatment of itch necessitates not only medication, but also the consideration of different psychological treatment modalities. Previous reviews showed that interventions, such as habit reversal training, arousal reduction and cognitive behavioral therapy, all have positive effects on psychological wellbeing, as well as on itch in different dermatoses (23, 24). Indeed, in a recent meta-analysis, the use of psychological interventions had larger effects on itching and scratching than on the severity of the skin disease (24).

Previous reviews on psychological interventions and itch were limited to discussions regarding the effects of psychological interventions, with little to no detail regarding the different types of psychological interventions employed (23–26). One aim of this review, thus, is to describe suitable treatment modalities as adjunct treatments for chronic itch. Additionally, we provide a basic framework of what type of interventions might be most beneficial for different types of chronic itch patients. Dermatologists are usually unfamiliar with these types of treatments.

## PSYCHOLOGICAL INTERVENTIONS WITH SHOWN TRACK RECORD FOR CHRONIC ITCH

### *Habit reversal training*

The goal of Habit Reversal Training (HRT) is to alter dysfunctional behavior by teaching patients how to replace negative behaviors with neutral actions. HRT was developed in 1973 (27). Early in its nascence, HRT was shown to have positive effects in the treatment of some compulsive anxiety-related disorders (e.g. onychophagia, trichotillomania, and head jerking), with treatment resulting in a reduction of about 99 % of the nervous habits after 3 weeks of training (27). Soon thereafter, HRT was also successfully used to decrease the frequency of scratching in patients with itch related dermatoses (28). Further studies demonstrated that those who received medical treatment in addition to HRT, when compared to patients who received medical treatment alone, had greater improvement in their skin status and a greater reduction of scratching behavior (29–31).

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HRT includes the following 3 components: awareness training, practicing a competing response replacing the dysfunctional behavior, and raising the motivation to control the habit. In the context of chronic itch, the awareness training consists of a detailed description of the scratch movement by the patient. Furthermore, it includes detecting the first movement that appears when showing the disadvantageous behavior (the early warning sign), as well as describing situations in which the behavior (e.g. moving the hand to the itchy side of the body) occurs most often. After raising awareness for the dysfunctional behavior, a movement competing with scratching is practiced. As soon as the urge to scratch occurs, patients are either taught to move their hands to their thighs, clench a fist for 30 s or grasp an object (28, 30, 31). The third component of training includes increasing the motivation to control the dysfunctional behavior. Significant others as well as the trainer should endeavor to compliment the patient for time periods in which the disadvantageous behavior is not shown. In case the patient conducts the unfavorable behavior, the family members are asked to remind the patient of practicing the competing response (27).

Despite the relative ease and effectiveness of HRT, to the best of our knowledge, a surprisingly limited number of studies have utilized HRT as part of a comprehensive treatment strategy in the context of chronic itch (32–34). Since HRT is known to be very effective, we recommend that clinicians consider HRT more often and early-on in the treatment of chronic itch, and that it additionally be considered as a potential first-line therapeutic strategy in the treatment of patients with scratching related to obsessive behaviors (e.g. prurigo nodularis). Surprisingly, the effect of HRT in patients with itch inducing dermatoses has only been studied in patients with atopic dermatitis (AD) (29, 30).

*Relaxation trainings*

Previous studies demonstrated a relationship between perceived stress and itch in patients with psoriasis, AD, acne, and urticaria (19, 20, 22, 35–41). Relaxation techniques appear to be helpful in the treatment of patients suffering from chronic itch (42–44). For these reasons, we recommend relaxation training be considered clinically in patients who report that their itch increases during periods of heightened stress. Importantly, relaxation techniques should be reserved for those patients who are open to this treatment modality.

Two relaxation techniques with similar effect sizes (45) that were shown to reduce itch are progressive muscle relaxation (PMR) and autogenic training (AT) (46, 47). These relaxation techniques are usually conducted in a quiet room while sitting comfortably on a chair or on a mattress.

PMR was developed by the American physician Edmund Jacobson at the beginning of the 20th century (46). Since then, short forms and modifications of this relaxation technique have often been used and have been shown to have positive psychophysiological effects in the general population and in patients with somatic and psychological diseases (48–52). PMR includes the tension of certain muscle-groups followed by the subsequent relaxation of these muscles. This technique is based on Jacobson's belief that experiencing relaxation – defined as the intermission of muscle contraction – can only be experienced after the experience of tension. In his original publication, Jacobson proposed 1-hour daily training sessions for 67 consecutive days. Jacobson emphasized that patients should not focus more than 30 min on tensing the muscles, while they should concentrate on relaxation the rest of the time. The relaxation state should not be reached actively, but instead by letting the particular body part fall back to the way it was before tensing. According to Jacobson, relaxation is not an active process, but rather is defined by the withdrawal of tension (46).

Since the original training was very long, recent studies have developed and successfully employed shorter versions of this relaxation technique (48–52). The training that showed positive effects on itch intensity and loss of sleep in AD-patients was a 4-week-training, during which the patients were asked to train twice daily. Subjects tensed different muscle groups for 10 s and relaxed them for 20 s afterwards (42). Unfortunately, information on the duration of the daily training is missing in this study (42). We have recently completed a study that demonstrates the beneficial effect of this technique in patients with different types of chronic itch including prurigo nodularis and atopic itch.

Autogenic training (AT) is a relaxation method that was developed by the German practitioner Johannes Heinrich Schultz at the beginning of the 20th century (47). AT is beneficial in the treatment of different somatic diseases, and is known to reduce stress and anxiety (53, 54). In contrast to PMR, this exercise does not include physical movements, but rather, asks subjects to concentrate mentally on certain body perceptions (47). In order to profit from this relaxation technique, it is necessary to be auto-suggestive. During the exercises, the facilitator guides the participants to concentrate on bodily perceptions by using phrases like 'your right arm is heavy' and 'your right arm is warm'. The standard exercises include imaginations on heaviness and warmth of the arm (and at the end, of the whole body), a regular heartbeat and breathing and coolness of the forehead. Importantly, autogenic training in patients with chronic itch avoided using phrases such as warmth, since the vasodilation associated with warmth may enhance itching (32). Instead, the autosuggestion 'the skin is calm and pleasantly cool,' as well as individually chosen phrases concerning the control of scratching and coping with itch were used (32). It is certainly possible to change the phrases according to the patients' needs, as

evidenced in patients suffering from body dysmorphic syndrome (55).

The decision on whether PMR or AT is recommended should be made after asking the patient about her capability to be influenced by auto-suggestions.

### *Cognitive behavioral therapy*

At about the same time that HRT was shown to be effective in chronic itch patients, other behavior techniques, such as aversion therapy (pairing an aversive stimulus with the negative behavior) and operant conditioning (rewarding adaptive and punishing of non-functional behaviors) were also being used to improve compulsive scratching (56, 57). These techniques both exemplified the field of behavioral therapy focusing on altering behavior. With the emergence of cognitive behavioral therapy (CBT), the role of cognition in orchestrating behavior came to fore. The term cognitive behavioral therapy refers to a combination of the psychological interventions described up to this point (habit reversal training, relaxation trainings) in combination with techniques aimed to restructure cognition.

Rational-emotive therapy (RET), which was developed by Ellis in 1955 (58), aims to alter patient cognition. Ellis postulated that humans tend to think irrationally, causing them much undue stress. Ellis additionally believed that while we tend towards irrationality, we are nevertheless equipped to both control and change these irrational beliefs into functional ones. In his ABC-theory, Ellis proposes that there are undesirable activating events (A), which evoke certain irrational beliefs (B), that subsequently result in dysfunctional consequences (C; 59). The task of the patient and therapist, therefore, is to identify said irrational beliefs and to replace them with rational beliefs, thereby leading to functional consequences. In the setting of chronic itch, an example of an irrational belief that patients might have is the belief that their scratch marks make them unattractive. The patient should correct the irrational belief to one that is more rational (e.g. even though my skin is itchy and I scratch, I am an attractive person). According to Ellis, irrational thoughts prevent individuals from achieving specific life goals (58). RET could thus simplify and aid patients in attaining life goals.

Cognitive restructuring techniques are also included in some stress management trainings (60), which have already been shown to be beneficial in patients with AD (61, 62). Several studies suggest that CBT (including cognitive restructuring) is an effective treatment method in chronic itch patients (32, 34). In these studies, a combination of relaxation training, cognitive restructuring and habit reversal training were used in adult patients with AD. Surprisingly, to the best of our knowledge, the effects of RET alone have never been tested in chronic itch patients. We recommend the use of RET in patients with chronic itch and comorbid depression or anxiety disorders, as well as for patients who report that their itch worsens in times of worrying. In patients with AD and psoriasis, such a relationship between catastrophizing and itch has been shown (22, 63).

Fig. 1 summarizes what cognitive-behavioral interventions can be used in the treatment of chronic itch. It is important to consider though that itch-related factors may influence each other and that then a combination of psychological interventions may be necessary.

## INTEGRATING NEW PSYCHOLOGICAL APPROACHES FOR CHRONIC ITCH TREATMENT

Chronic itch shares many features with chronic pain, since both cause significant distress, are difficult to treat and have a negative effect on emotions and cognitive function (64). For this reason, psychological interventions that have proved effective in chronic pain arguably should prove successful in the treatment of chronic pruritus.

Contextual cognitive behavioral therapy (CCBT) belongs to the family of CBT and has demonstrated a positive effect in chronic pain patients (65, 66). Chronic pain is, by its nature, a difficult disease entity to treat. For this reason, many patients suffering from chronic pain have often failed various different treatments. With each passing failure, the patient is understandably disheartened, invariably encouraging the development of inappropriate behaviors. What behaviors manifest in a given patient arise out of the patient and his or her specific circumstances. Contextual therapy recognizes the emotions and behaviors produced by the patient's pain, in an attempt to help the patient come to terms with his pain, as opposed to merely controlling it. Initially, CCBT can evoke a degree of patient resistance, as it attempts to normalize human suffering (66). Ultimately, the aim of CCBT is to change how patients respond to symptoms, as opposed to preventing symptoms.

Acceptance and Commitment Therapy (ACT) and Mindfulness Based Stress Reduction (MBSR) are two types of contextual cognitive behavioral therapies. Both

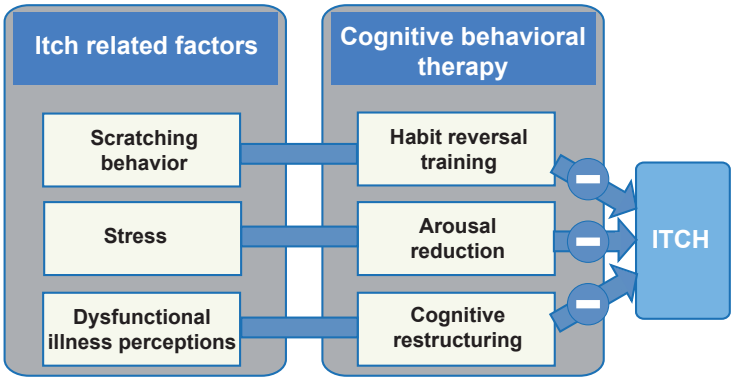


*Fig 1.* Illustration of what psychological interventions were shown to be or may be helpful in the treatment of chronic itch.

ACT and MBSR have been shown to be non-inferior alternatives for patients suffering from chronic conditions (65). We believe that these approaches are promising for the treatment of chronic itch, since many patients with chronic itch (similar to patients with chronic pain) must learn to live with the symptom for the rest of their life. Furthermore a negative emotional state can lead to increased pain and itch. Given that there are almost no data regarding the effectiveness of these treatments in the setting of chronic skin disease and chronic itch, more research is needed regarding the use of these treatment modalities before specific recommendations can be made. We discuss both therapies (ACT and MBSR) in more detail below.

*Acceptance and commitment therapy*

In contrast to cognitive restructuring, ACT aims to evoke or strengthen the acceptance of negative disease-related events, emotions and cognitions (acceptance), in order to alter the function of these events and thoughts, via various methods (67). Cognitive defusion, which asks patients to see thoughts as they are, as opposed to what they say they are, is one such method. In case of chronic itch, one recurrent thought the patients might have is that 'My skin will never be as beautiful as the skin of my friends', which in turn could manifest as anger in the patient. Rather then allow the patient to become consumed with this rage, ACT asks patients to realign their emotions. In order to accomplish this task, the patient may, for example, be asked to think of a catchy song every time they have this thought. Imagination of a melody to this thought, theoretically should lead to a reduction of the attachment of negative sentiments to negative thoughts, hence the term, thought defusion. Moreover, ACT favors to go in contact with events as they occur, instead of pushing them away (being present) and also to take the perspective of other persons (self as context). As another important core process, ACT aims to help the patient realize his own true values instead of the values he/she developed during his/her life due to social expectations and norms (values). The last core process of ACT is the committed action, which comprises a behavior change in order to achieve self-chosen values. Here, elements of classical behavior therapy like exposure, goal-setting and learning of skills are included (67). Hayes et al. (67) emphasizes that all these 6 core processes are interrelated and that the aim is to enlarge the psychological flexibility, which he refers to as the 'ability to contact the present moment more fully as a conscious human being, and to change or persist in behavior when doing so serves valued ends' (cited after Hayes et al., 67).

During the recent years, a number of studies indicated that ACT was effective in the treatment of chronic pain (e.g. 66, 68–70). Outcome measures in these studies were pain intensity, satisfaction with life (70), depression and anxiety (69, 70), health-related quality of life, self-efficacy, pain-related functioning (69) as well as chronic pain acceptance (68) for which positive effects could be observed. It would certainly be worth to also try this type of intervention with chronic itch patients.

*Mindfulness based stress reduction*

Another approach, which could be helpful in the treatment of chronic itch and which has been shown to be effective in the treatment of chronic pain (71–75), is MBSR. This kind of stress reduction method differs from formerly outlined relaxation techniques (PMR and AT) in that way that its main goal is to practice mindfulness, which means moment-to-moment awareness without judging emotions, thoughts or sensations. It therefore, parallels the core process 'acceptance' of ACT in some ways. MBSR was first developed in the US by Kabat-Zinn in 1982 (76) for patients with chronic pain. It includes meditation exercises, yoga and psycho-education. Even though this stress reduction was used in chronic pain patients at first, it is interesting that its founder conducted a study, where he also investigated its effects in patients suffering from chronic itch. In this study (77), patients with psoriasis were randomized to either phototherapy/ photochemotherapy alone or in combination with MBSR. The MBSR instructions were delivered by audiotape while receiving the light therapy. The instructions focused on mindfulness of breathing, body sensations, sounds, thoughts and feelings. At a later stage, the patients were asked to imagine seeing the UV light and to slow down the growing of skin cells. Patients receiving the MBSR in combination with the light therapy reached the point where they only had half of the symptoms and the point where only 5% or less of the skin were affected faster than patients of the control group (77). Surprisingly, after this pivotal study this method has not been reported again in patients suffering from itch. It would be interesting to investigate its effects in patients who report that their itch worsens under stress. Here, again, in our opinion, patients with AD, psoriasis, chronic urticaria, lichen simplex chronicus and acne might especially profit from this technique.

## SUMMARY

The aim of this review was to take a closer look at psychological interventions that were shown to be beneficial in the treatment of patients suffering from chronic itch. Therefore, this review provided a detailed description of the procedure of habit-reversal training, relaxation techniques and cognitive behavioral therapies. It also pointed out that relaxation techniques might be especially helpful in the treatment of chronic itch, when a relationship between stressful circumstances and exacerbations can be shown in the patients, while habit reversal trainings could be the first approach in patients with compulsive scratching such as observed in patients with prurigo nodularis. Of

course, CBTs as a combination of different psychological interventions offer the opportunity to the patients to pick the approach that best fits to his/her demands. Moreover, in this review, we also introduced newer psychological interventions (ACT and MBSR), which are already known to be helpful in the treatment of chronic pain. Because of the lack of data on effects of MBSR and ACT on itch and scratching, we strongly suggest conducting randomized controlled trials assessing the effectiveness of these interventions in chronic itch patients.

In general, we advocate that psychological interventions should be treated as beneficial additional treatment option in chronic itch patients. In our point of view the combination of medical and psychological treatments would have the best effects in many patients. Therefore, we suggest, that psychological interventions should be offered to every patient, who is open-minded towards holistic approaches. At this point, it is indispensable to mention, that the start of a successful treatment of chronic itch certainly lies in a trustful doctor-patient relationship, where doctor and patient see each other as equal partners in the process of decision making.

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