DOI: 10.1111/dth.13100

ORIGINAL PAPER



CHERAPY WILEY

Effects of family constellation seminars on itch in patients with atopic dermatitis and psoriasis: A patient preference controlled trial

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Abstract

Family dynamics play a major role in itch related dermatoses. The aim of the study was to evaluate the effectiveness of family constellation seminars (FCS) in the decrease of itch in atopic dermatitis (AD) and psoriasis. Thirty-one adult patients with chronic itch (16 with AD and 15 with psoriasis) were allocated to intervention group (FCS + G) and control group (CG). Patients from FCS + G have participated in a series of four FCS for 3 months. During the study period, all patients used only emollients. Itch was evaluated by 27-item questionnaire and skin condition was evaluated by SCORAD and PASI. The severity of itch in FCS + G decreased (Median; (25%;75%)) from 8.42 (6.57;11.92) initially to 4.78 (1.36;9.14); p < .01 after 1 month and (0.61 (0;6.66); p < .001) after 9 months after the psychological intervention with no significant changes in the CG. In the patients with AD in the FCS + G, SCORAD decreased (21.5 (14.4;40); 14.1 (7.3;15.5) p < .05; 7.2 (3.6;11); p < .05). In the FCS + G, itch decreased both in patients with AD and psoriasis, with less significant visible changes of skin in patients with psoriasis. Participation in FCS in a series of four seminars has high effect (r = .53) on reduction of itch and high effect (r = .74) on improvement of AD signs with lower effect on skin condition in patients with psoriasis for 4 months. Positive effect of FCS gradually increases during at least 9 months. Further studies for understanding FCS influence on the patients with itch are needed.

KEYWORDS

itch, psychodermatology, psychocutaneous

1 | INTRODUCTION

Variety of psychosocial stressors may contribute to the exacerbation of itch in patients with atopic dermatitis (AD) and psoriasis (Evers et al., 2010; Hall et al., 2012; Kim, Park, Lee, & Kim, 2016). Recent studies have found that family strain (Hunter, Griffiths, & Kleyn, 2013), early childhood trauma (Simonić et al., 2010), current daily stress (Dalgard, Lien, & Dalen, 2007; Verhoeven et al., 2009), personality traits, anxiety, and depression (Remröd & Sjöström, 2015; Schut et al., 2015; Schut

et al., 2018) are important factors in influencing the intensity of itch and other clinical manifestations of AD and psoriasis (Reich, Mędrek, & Szepietowski, 2016).

Several studies have demonstrated the effects of psychologic interventions on the intensity of itch and course of disease in patients with AD and psoriasis (Chida, Steptoe, Hirakawa, Sudo, & Kubo, 2007; Lavda, Webb, & Thompson, 2012; Schut, Mollanazar, Kupfer, Gieler, & Yosipovitch, 2016). Lavda et al. (2012) in a meta-analysis emphasize the high effectiveness of habit reversal, cognitive-based therapy (CBT) and ^{2 of 7} WILEY DERMATOLOGIC

medium-sized effects of arousal reduction for itch reduction. According to the other meta-analysis(Chida et al., 2007), autogenic training, CBT, dermatological education, cognitive-behavioral therapy, and stress management program may lead to a significant decrease of chronic itch in AD patients, but habit reversal behavioral therapy does not. Nevertheless, these methods of psychological intervention do not specifically aim at family stress. Marron, Tomas-Aragones, Boira, and Campos-Rodenas (2016) concluded that for assessments of family stresses and relationships in patients with chronic itch, genograms may help reveal important information. Poot et al. (2011) also highlighted the importance of genograms and found that in patients with alopecia areata, AD and psoriasis have three times higher risk of moderate family stress and 16 times higher risk of severe family stress and dysfunction, as opposed to controls.

Family constellation seminars (FCS) are one of the effective methods to manage family and social stress in the general population (Hunger, Bornhäuser, Link, Schweitzer, & Weinhold, 2014). As an initial assessment, FCS uses information from genograms. Recent randomized controlled trials have shown that after FCS, patients demonstrate long-lasting improvements in social functioning and decreased family stress (Hunger, Weinhold, Bornhäuser, Link, & Schweitzer, 2015). The theoretical model of the FCS intervention in patients with chronic itch is based on the assumption that, first, appropriate functioning of family members may be distorted by a traumatic event leading to series of secondary stresses. Second, the itch or other symptoms and signs of AD or psoriasis may serve as a symbolic representation of the psychological trauma and thirdly, FCS helps patients to cope with the psychological trauma, improve family interactions and decrease stress.

The primary aim of our study is to check the effects of FCS on the severity of itch in patients with AD and psoriasis. The secondary task was to evaluate if FCS changes the skin condition in patients with AD and psoriasis.

2 | METHODS

Participants of the study were recruited from adult outpatients with chronic itch lasting more than 6 weeks on the base of a dermatology clinic (Therapeutic and Diagnostic Center "Asclepius"), which is a university certified site for a performance of clinical trials. Diagnosis of the psoriasis or AD was confirmed at least by two dermatologists. The method of intervention and selection of control group was based on a patient-preference randomization procedure, as described in a study by Fortune, Richards, Griffiths, and Main (2004). After the description of the FCS process, patients made their own decision regarding whether to participate in the intervention group, control group, or not to participate in the study at all. Figure 1 depicts the flow of the study.

The intervention group (FCS + G) consisted of 16 patients with moderate chronic itch (9 patients with AD and 7 psoriasis, mean age was 48 + 4.07 years, 4 males and 12 females). Control group (CG) consisted of 15 patients (7 with AD, 8 with psoriasis, mean age 36.2 + 2.67; 7 males, 8 females). All of the patients signed the informed consent statement. As a remuneration for participation in

the study, patients had free of charge visits to the dermatologist and free participation in FCS.

During the period of the study, all the patients agreed to use only emollients without any oral or topical medications. The study design was approved by the Local Ethics Committee at TDC PE "Asclepius", Uzhgorod, Ukraine. Patients of the FCS + G participated in four family constellation weekend seminar sessions, which lasted approximately 7 hr each in the schedule. Two seminars in 2 consecutive days were followed by a monthly interval, then another seminar followed by a 2-month interval, and a final seminar. This schedule allowed participants some time to implement the skills learned in seminars to utilize in their life and relationships. FCS were conducted by a certified psychologist, who had an experience of facilitating FCS for more than 5 years. Itch was diagnosed with the 27-item questionnaire Electronic Calculator Of Chronic Pruritus (ECCP; Andrashko, Yaremkevych, Devinyak, & Zimenkovskyi, 2018) which was filled in by the patient and the dermatologist. Skin condition was evaluated by SCORing Atopic Dermatitis Index (SCORAD; Dermatology (Basel, Switzerland), 1993) and Psoriasis Area and Severity Index (PASI; Fredriksson & Pettersson, 1978) in patients with AD and psoriasis, respectively. Parts of each FCS were recorded on video, affected parts of the skin were photographed during each visit. The schedule of interventions and diagnostic procedures is shown in Table 1.

2.1 | Statistical analysis

Differences between variables within group at Visits 1–5 and Visits 1–6 in the intervention group were evaluated by Wilcoxon matchedpair test; differences between groups were evaluated by Mann-Whitney *U* test for independent samples considering (Conroy, 2012; StatSoft Statistica for Windows 13.0). Effect size (*r*) for Mann-Whitney *U* test was evaluated according to Fritz, Morris, and Richler (2012), considering "low effect" (.1 < *r* < = .3), "moderate effect" (.3 < *r* < = .5) and "high effect" (.5 < *r*). Correlation analysis between visits and itch severity combined index was performed by Spearman rank-order correlations method.

3 | RESULTS

The analysis was made by intention-to-treat principle (ITT) and included all the participants, initially assigned to intervention (n = 16) and control (n = 15) groups. Patients of the intervention group with AD and psoriasis had a similar intensity of itch according to ECCP. At Visit 1, the difference was only in the pattern of itch sensation during the last month: all of the patients with psoriasis mentioned that the intensity of itch is constant during the long period of time, while six patients with AD mentioned that itch has mildly decreased from the previous month.

The results of changes in the itch are presented in Table 2. Initial evaluation of the FCS + G and CG shows that according to 27-item ECCP, groups differ significantly only by two parameters: patients of the intervention group had higher level of the lowest intensity of itch, and lower influence of itch on sexual functions. However, 1 month after the

FIGURE 1 Flow of the patients to the study. AD, atopic dermatitis; ECCP, 27 item questionnaire "Electronic Calculator of Chronic Pruritus"; FC, family constellation; FCS, family constellation seminar; PASI, Psoriasis Area and Severity Index; SCORAD, SCORing Atopic Dermatitis Index

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CONSORT 2010 Flow Diagram



TABLE 1 Schedule of the interventions and diagnostic procedures

Date (month, year)	July 2016	August 2016	September 2016	October 2016	November 2017	August 2017
	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
Family constellation seminar	2 day * 7 hr	7 hr		7 hr		
Electronic calculator of chronic pruritus 27 item questionnaire	x	x	x	x	x	x
SCORing atopic dermatitis index (SCORAD)	x	x	x	x	x	х
Psoriasis area and severity index (PASI)	x	x	х	x	x	x

Visit 6 was planned only for an intervention group.

series of FCS (Visit 5) in comparison with the control group, patients from the intervention group had lower itch frequency and lower intensity of excoriations. Their behavior, attentiveness, daily activities, and social relationships were less affected by itch and their quality of life had improved.

Analysis of changes in each group between Visits 1 and 5 by Wilcoxon criterion shows that patients of the FCS + G and CG had a lower influence of itch on their working capacity and productivity on the fifth visit in comparison with the first visit, and the amount of awakenings was lower in both groups. From Visit 1 to Visit 5 patients from the FCS + G were also demonstrating a decrease in itch duration and frequency, a significant decrease of excoriations, and a lower influence of itch on the physical, daily and behavioral activities. They felt less emotional depletion due to itch, itch was less distracting to their attention, and they have had less problems with falling asleep.

The sixth visit was performed in order to assess the longevity of the changes in patients of FCS + G with AD and psoriasis in the feeling of itch. According to the data, presented in Table 2, most of positive changes in the feeling of itch were progressing throughout the year. Patients reported significant decrease of itch, eight patients (five patients with AD [55.5%] and three with psoriasis [42.8%]) from the intervention group reported that they did not feel itch during the last month.

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TABLE 2 Electronic calculator of chronic pruritus questionnaire results in visits 1, 5, and 6 (Median; 25%; 75%)

	Visit 1		Visit 5		Vicit 6
Parameter	Intervention group (n = 16)	Control group (n = 15)	Intervention group (n = 16)	Control group (n = 15)	Intervention group (n = 16)
1. Changes of itch during the last month comparing to previous month	3 (1.5;3)	3 (3;3)	2.5 (0.5;3)	3 (2;3)	0.5 (0;3)*
2. Itch frequency ^b	1.08 (1.08;1.44)	1.08 (0.72;1.08)	0.72 (0.18;1.08)**	1.08 (0.72;1.08)#	0.18 (0;0.9)**
3. Average duration of itching episode ^b	1.05 (0.42;1.68)	0.84 (0.42;0.84)	0.42 (0;1.05)*	0.42 (0.42;1.26)	0.21 (0;1.05)*
4. Itch occurrence during the day	1 (1;2)	1 (1;1)	1 (0.5;3)	1 (1;1)	0.5 (0;1)
5. Itch intensity after mosquito bite	0.007 (0.003;0.024)	0.002 (0.001;0.017)	0.005 (0.001;0.017)	0.003 (0.002;0.021)*	0 (0;0.004)**
6. Itch intensity at the moment of questionnaire filling	0.18 (0.04;0.44)	0.06 (0.01;0.16)	0.05 (0.01;0.34)	0.15 (0.04;0.35)	0 (0;0.043)***
7. Itch highest intensity ^b	1.03 (0.28;1.15)	0.88 (0.2;1.02)	0.97 (0.08;1.05)	0.84 (0.78;0.92)	0.051 (0;0.25)***
8. Itch lowest intensity ^b	0.18 (0.09;0.27)	0.09 (0.03;0.15)#	0.2 (0.02;0.32)	0.12 (0.09;0.3)	0.015 (0;0.061)**
9. Itch average intensity ^b	0.77 (0.22;0.86)	0.74 (0.14;0.83)	0.51 (0.03;0.83)	0.76 (0.72;0.84)	0.009 (0;0.206)***
10. Feeling exhausted ^{a,b}	0.47 (0.16;0.61)	0.2 (0.03;0.45)	0.13 (0;0.45)	0.38 (0.18;0.51)	0 (0;0.091)***
11. Excoriations occurrence ^b	0.55 (0.22;0.77)	0.66 (0.22;0.66)	0.22 (0;0.33)*	0.44 (0.22;0.66)#	0 (0;0.22)**
12. Physical activity limitations ^{a,b}	0.09 (0;0.43)	0.17 (0;0.17)	0 (0;0.09)*	0 (0;0.17)	0 (0;0)*
13. Daily activities limitations ^{a,b}	0.25 (0.13;0.63)	0.25 (0;0.5)	0 (0;0.13)**	0.25 (0;0.5)#	0 (0;0.25)**
14. Appetite loss ^{a,b}	0 (0;0)	0 (0;0.38)	0 (0;0)	0 (0;0)	O (O;O)
15. Social contact limitations ^{a,b}	0 (0;0.31)	0.31 (0.31;0.62)	0 (0;0.16)	0.31 (0;0.31)#	0 (0;0.31)
16. Behavioral changes ^{a,b}	0.25 (0;0.5)	0.25 (0;0.25)	0 (0;0.25)*	0.25 (0.25;0.5)#	0 (0;0.125)*
17. Emotional depletion ^{a,b}	0.4 (0.2;0.6)	0.4 (0.2;0.4)	0.2 (0;0.2)**	0.2 (0.2;0.4)	0 (0;0.2)*
18. Attention deficiency ^{a,b}	0.24 (0;0.48)	0.24 (0;0.72)	0 (0;0.36)*	0.24 (0.24;0.48)#	0 (0;0.48)
19. Working capacity decrease ^{a,b}	0.54 (0;1.35)	0.54 (0;1.08)	0 (0;0.54)*	0.54 (0;0.54)*	0 (0;0.54)*
20. Productivity decrease ^{a,b}	0.17 (0.09;0.43)	0.34 (0.17;0.51)	0 (0;0.34)	0.17 (0.17;0.34)*	0 (0;0.085)**
21. Problems with falling asleep ^{a,b}	0.42 (0.32;0.63)	0.21 (0.21;0.42)	0.21 (0;0.42)*	0.21 (0;0.21)	0.105 (0;0.315)**
22. Awakenings ^{a,b}	0.66 (0.17;0.83)	0.33 (0.33;0.33)	0.17 (0;0.33)*	0.33 (0;0.33)*	0 (0;0.33)*
23. Sleeping pills use ^{a,b}	0 (0;0.18)	0 (0;0)	0 (0;0)	0 (0;0)	0 (0;0)
24. Libido decrease ^{a,b}	0 (0;0)	0 (0;0.55)	0 (0;0)	0 (0;0)	0 (0;0)
25. Sexual activity decrease ^{a,b}	0.24 (0;0.48)	0.48 (0.48;0.48)#	0 (0;0.48)	0.48 (0.48;0.48)#	0 (0;0.24)
26. Avoidance of sex ^{a,b}	0.16 (0;0.31)	0.31 (0.31;0.62)#	0 (0;0.31)	0.31 (0.31;0.62)#	0 (0;0.155)
27. Itch severity combined index	8.42 (6.57;11.92)	8.71 (6.81;9.24)	4.78 (1.36;9.14)**	7.73 (6;10.45)#t	0.61 (0;6.66)***
Effect size				r =34	

#p < .05, #t - p = .054 by Mann–Whitney test between intervention and control groups at Visits 1 and 5.

*p < .05; **p < .01; ***p < .001 by Wilcoxon test for dependent samples; Visits 1–5 and 1–6.

r, effect size (between intervention and control groups, Visit 5).

^aDue to itch.

^bDuring past month.

Table 3 contains the results of the skin changes in patients with AD and psoriasis, measured by SCORAD and PASI correspondingly. At Visit 1, patients from the GG had higher lichenification score, otherwise there was no difference between skin conditions in groups by subscales of SCORAD. At Visit 5, the patients of the intervention group have demonstrated significant decrease in severity of most of the signs of AD, in comparison with the initial state and with the CG. According to SCORAD, remission of AD was seen on Visit 6 in most of the patients of FCS + G.

Severity of psoriasis by PASI in patients of the intervention and control groups at Visit 1 was similar to all body parts (Figure 2). At Visit 5, the patients of the intervention group demonstrated lower severity of psoriasis on the head area in comparison with the control group. In the intervention group, PASI significantly decreases from Visits 1 to 5 and continues to improve to Visit 6.

All the above-mentioned calculations were performed considering the ITT principle, taking into account results of all 16 patients primarily assigned to the intervention group. Considering our primary aim to

TABLE 3 Scoring atopic dermatitis (SCORAD) in patients with atopic dermatitis and psoriasis area and severity index (PASI) for patients with psoriasis in Visits 1, 5, 6 (Median; 25%; 75%)

	Visit 1		Visit 5	Visit 6				
Parameter	Intervention group	Control group	Intervention group	Control group	Intervention group			
Scoring atopic dermatitis index (SCORAD)								
Number of patients	n = 9	n = 7	n = 9	n = 7	n = 9			
Area involved	2.5 (2;15)	6 (5;15)	1.5 (0.5;5)**	10 (8;16)#	1 (0.5;5)**			
Erythema	2 (1;2)	1 (1;2)	1 (0;1)*	1 (1;2)#	1 (0;1)*			
Edema/population	1 (1;2)	1 (0;2)	0 (0;0)*	1 (1;1)#	0 (0;0)*			
Oozing/crusting	1 (1;1)	1 (1;2)	0 (0;1)*	1 (0;2)#	0 (0;0)*			
Excoriation	1 (0;1)	1 (1;2)	0 (0;0)*	1 (0;2)#	0 (0;0)*			
Lichenification	1 (0;2)	2 (2;3)#	0 (0;2)	2 (2;3)#	0 (0;1)			
Dryness	2 (1;2)	2 (2;2)	1 (1;2)	2 (1;2)#	1 (0;1)*			
SCORAD	21.5 (14.4;40)	34.5 (32.7;42.8)	14.1 (7.3;15.5)*	33.5 (23;38.2)##	7.2 (3.6;11)**			
			<i>r</i> =74					
Psoriasis area and severity index (PASI)								
Number of patients	n = 7	n = 8	n = 7	n = 8	n = 7			
Arms	2 (0.4;2.2)	1.7 (1;2)	0.8 (0.4;2.4)	1.4 (0.9;1.8)	0.6 (0.2;2.4)			
Head	0 (0;0.8)	1 (0.3;1.1)	0 (0;0.4)	1 (0.4;1.1)#	0 (0;0.3)			
Legs	2 (0;11.2)	2.4 (2.2;5.6)	2 (0;8.4)	2.8 (2;4.4)	1.6 (0;6.4)*			
Trunk	1.8 (0;2.4)	0.2 (0;0.9)	1.8 (0;3.6)	1.1 (0;1.5)	1.2 (0;3.6)			
PASI	4.8 (2;17.2)	4.8 (4;8.9)	4.4 (0.8;15.2)*	7.4 (3.6;8.3)	3.6 (0.2;12.4)*			

p < .05, p < .01 by Mann–Whitney test between intervention and control groups at visits 1 and 5.

*r - p < .05; **p < .01; ***p < .001 by Wilcoxon test for dependent samples; Visits 1–5 and 1–6.

r, effect size (between intervention and control groups, Visit 5).



FIGURE 2 Itch severity combined index in patients of the intervention and control groups during the study (median; 25%; 75%)

analyze influence of FCS on itch, we have also performed perprotocol (PP) analysis of subgroup of eight patients, who have participated in all four FCS sessions.

PP analysis shows higher effect sizes of FCS on the severity of itch, compared with ITT. High effect size of FCS on the following parameters of itch were reported by the eight patients from the FCS + G: changes of itch during the last month (1 [0;1.5]; p = .0067; r = -.56), itch frequency (0.4 [0;0.7]; p = .0067; r = -.58); feeling exhausted due to itch

(0 [0;0.2]; p = .0019; r = -.61); behavioral changes due to itch (0 [0;0.1]; p = .0067; r = -.59); attention deficiency due to itch (0 [0;0.1]; p = .013; r = -.52); productivity decrease due to itch (0 [0;0]; p = .0008; r = -.68); itch severity combined index (3.2 [0;6.5]; p = .0085; r = -.53).

Moderate effect size of FCS was reported on itch duration (0.4 [0;0.4]; p = .0556; r = -.42); itch at the moment of filling in the questionnaire (0 [0;0.2]; p = .0873; r = -.36); itch average intensity (0.1 [0;0.8]; p = .1006; r = -.34); excoriations (0 [0;0.4]; p = .0873; r = -.37); daily activities limitations (0 [0;0.1]; p = .0473; r = -.43); social contact limitations (0 [0;0.2]; p = .1315; r = -.34); emotional depletion due to itch (0 [0;0.2]; p = .0401; r = -.44); working capacity decrease due to itch (0 [0;0]; p = .1152; r = -.38). Itch severity combined index in FCS + G negatively correlated with number of visits (Spearman R = - .49, p = .000001) with no correlation in the CG.

4 | DISCUSSION

Itch is the complex unpleasant sensation which evokes desire to scratch. The primary aim of the study was to verify the hypothesis that FCS may be an efficient supplementary method for managing chronic itch in patients with atopic dermatitis and psoriasis. From initially evaluated 93 patients with chronic itch 16 patients with AD and psoriasis participated in the series of four family constellation seminars for 3 months, and 15 patients to the control group. Assignment to the groups was

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made by patients' choice, so true randomization was not performed. Lavda et al. (2012) in their meta-analysis of the effectiveness of psychological interventions for adults with different skin conditions demonstrated that there was no difference between the effect sizes of psychological interventions in studies that did randomly assign the patients versus studies that did not. Only eight patients participated in all initially planned four FCS. Control group patients have had the same skin condition and itch severity as patients of the intervention group. Patients of the intervention and control groups used only emollients as basic care for the affected skin, and were not applying other topical or systemic treatment to the skin lesions or itch.

In our study, we decided to check the effects of FCS on itch severity in patients with both AD and psoriasis as these conditions are considered to be classic examples of psychophysiologic psychodermatoses. During the study period, after participating in series of FCS, patients in intervention group reported significant decrease in itch. Comparison of results by ITT and PP principles shows that participation in four FCS has higher effect size, than participation in at least one FCS.

Per protocol results show high effect of FCS (r = -.53) on itch severity in short and long period, and it corresponds to the results of the meta-analysis conducted by Lavda et al. (2012). The effect of FCS intervention on the skin condition differs between the patients with AD and psoriasis, with AD patients demonstrating better reaction of the skin on the intervention. Nevertheless, patients with psoriasis may also benefit from FCS considering itch reduction. This result of our study coincides with the results of a Swedish study by Remröd & Sjöström (2015), where itch severity was found not to be related to PASI during the psychological intervention.

4.1 | Limitations and future directions

Our study has several limitations including smaller sample size, the absence of true randomization, and assessment of the patients of the control group 12 months after the start of the study. The most important questions evolving from the study are to look for possible immune, histologic, and nervous changes, and mediating the effects of FCS on itch and skin condition in patients with AD and psoriasis. Further research is needed in this area. Second direction of the research could focus on individual differences in patients with itch-related psychodermatoses, and who among them could be an appropriate candidate for FCS. The other question would be the minimal number of FCS sessions, which could be sufficient to help patients with itchy dermatoses.

5 | CONCLUSION

Family Constellation Seminars have significant effect on reduction of itch (r = -.53) and reduction of clinical signs of atopic dermatitis (r = -.74) with lower effect on skin condition in patients with psoriasis during 4 months series. Positive effect of FCS gradually increases within (at least) 9 months and may lead to further decrease of itch and improvement of skin condition in patients with AD and psoriasis. Further studies with large sample size and international collaboration in

understanding the effects of FCS on patients with itchy dermatoses and psychocutaneous disorders are needed.

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How to cite this article: Jafferany M, Capec S,

Yaremkevych R, Andrashko Y, Capec G, Petrek M. Effects of family constellation seminars on itch in patients with atopic dermatitis and psoriasis: A patient preference controlled trial. *Dermatologic Therapy*. 2019;32:e13100. <u>https://doi.org/10.1111/dth.13100</u>