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Itching in Patients with Chronic Hand Eczema: Data from the CARPE Registry

Linda Ruppert^a Christian Apfelbacher^{a,b} Sonja Molin^c Andrea Bauer^{d,e}
Vera Mahler^g Jochen Schmitt^{e,f} Peter Elsner^h Thomas L. Diepgen^a
Elke Weisshaar^a

^aDepartment of Clinical Social Medicine, Occupational and Environmental Dermatology, University Hospital, Ruprecht Karls University, Heidelberg; ^bMedical Sociology, Institute of Epidemiology and Preventive Medicine, University of Regensburg, Regensburg; ^cDepartment of Dermatology and Allergy, Ludwig Maximilian University, Munich; ^dDepartment of Dermatology and ^eUniversity Allergy Center, University Hospital Carl Gustav Carus, Technical University Dresden, and ^fCenter for Evidence-Based Healthcare, Medical Faculty Carl Gustav Carus, Technical University Dresden; ^gDepartment of Dermatology, University Hospital of Erlangen, Friedrich Alexander University, Erlangen; ^hDepartment of Dermatology and Dermatological Allergy, Friedrich Schiller University, Jena, Germany

Key Words

Atopy · Chronic hand eczema · Dermatology Life Quality Index · Eczema · Itch · Pruritus · Quality of life · CARPE registry

Abstract

Background: Itching is a leading symptom of chronic hand eczema (CHE) having a great impact on patients. The determinants of itching in CHE are unclear. **Objective:** We performed a cross-sectional analysis investigating factors associated with the presence and severity of itch in CHE patients from the CARPE registry. **Methods:** We present baseline data on itch in relationship with sociodemographic factors, severity of CHE, atopy, contact allergy, treatment and patient-reported outcomes including health-related quality of life (HRQoL). **Results:** Of 1,051 patients with CHE, 78.1% reported itching. Significant positive associations with itching were observed for younger age groups (17–25 and 26–45 years), for moderate, severe and very severe CHE and for small/moderate impairment in HRQoL. Atopic skin diathesis, hardly being able to realize treatment recommendations

and very or extremely large impairments in HRQoL were associated with itch severity. **Conclusion:** Taking the identified variables into account may help identify vulnerable groups most affected by (severe) itch.

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Introduction

Hand eczema (HE) is a frequent and complex disease in terms of morphology, location, and especially of etiology [1, 2]. In contrast to acute HE, chronic hand eczema (CHE) is characterized by longer disease duration or recurrent episodes and is frequently refractory to topical anti-inflammatory treatment. Patients with CHE complain about a variety of symptoms such as itching, burning, stinging and pain. Often itching is the dominating symptom, but other dermatoses and diseases may also present with itching of the hands, requiring a precise diagnostic

L. Ruppert and C. Apfelbacher share first authorship.

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Elke Weisshaar, apl. Prof. Dr. med.
Department of Clinical Social Medicine, Occupational and Environmental Dermatology
University of Heidelberg
Thibautstrasse 3, DE–69115 Heidelberg (Germany)
E-Mail elke.weisshaar@med.uni-heidelberg.de

procedure of this symptom [3]. However, little is known about factors associated with the occurrence and severity of itching in CHE. Previous studies have focused on co-factors of itching in patients with various dermatological diseases [4, 5] or in samples drawn from the general population [6, 7]. An ongoing cross-sectional study in dermatological departments of 13 European countries investigates the prevalence and intensity of itch in dermatological patients. HE was reported to be among the most frequent diseases in patients suffering from (acute) itch [8].

The CARPE registry has been set up to evaluate sociodemographic and clinical characteristics as well as patient-reported outcomes and treatment modalities in patients affected by CHE. The aim of this data analysis was to identify factors associated with itch and itch severity using baseline data from all CHE patients included in CARPE.

Materials and Methods

The CARPE (German acronym: Chronisches Handekzem-Register zum Patienten-Langzeitmanagement, meaning chronic hand eczema registry on long-term patient management) registry was established in 2009 as a prospective observational patient cohort study. Eligible patients are patients diagnosed with CHE (defined as disease duration ≥ 3 months or > 2 flares within the previous 12 months), with previous treatment with topical corticosteroids, no long-lasting healing under adequate topical treatment including corticosteroids and no other dominating active severe skin diseases or acute skin infection. Data are collected through dermatological examinations and patient questionnaires, e.g. through the Physician Global Assessment (PGA) and the Dermatology Life Quality Index (DLQI). The design and methodology of the CARPE registry have been previously described in detail [9, 10] (for further details see also <http://carpe.dermis.net>). Ethical approval was obtained from the University of Heidelberg, Germany (No. S-433/2008). The study was established according to the guidelines of good clinical practice. Patients gave their written informed consent.

This analysis is based on data from the physicians' documentation as well as patient data assessed at the first examination (baseline examination). We performed a cross-sectional analysis ($n = 1,051$) investigating factors associated with the presence and the severity of itch in patients with CHE.

Primary Outcome

Current itching was assessed by the physician by means of a verbal rating scale in four categories (none, mild, moderate and severe). Itching was evaluated once at baseline examination. 'Mild' and 'moderate' were collapsed into one category. The following two variables were used as outcome variables: (1) presence of itch (yes vs. no); (2) severity of itch (severe vs. mild/moderate).

Sociodemographic and Clinical Data

The following variables were explored in correlational analyses (fig. 1): (1) sex (male, female); (2) age (grouped into four categories: 17–25 years, 26–45 years, 46–64 years, ≥ 65 years); (3) severity of CHE (assessed by PGA, supported by the use of a validated photographic guide [11] and rated on a five-point Likert scale: very severe, severe, moderate, almost clear, clear); (4) self-assessed severity of CHE, rated on a visual analogue scale ranging from 0 (clear) to 10 (very severe); (5) diagnosis of CHE (due to a frequent clinical overlap seen in CHE, multiple diagnoses were possible); (6) atopy (yes vs. no; documented according to the Erlangen Atopy Score [12]); (7) contact allergy (type IV allergy yes vs. no); (8) reported treatment of CHE in the 12 months prior to inclusion into the registry (topical treatment yes vs. no, UV phototherapy yes vs. no, systemic therapy yes vs. no); (9) patient-reported outcomes: (a) therapy perceived as burdensome, therapy being time-consuming and experience of unpleasant side effects, rated on a four-point Likert scale (not at all, a little, a lot, very much); (b) realization of treatment recommendations, rated on a four-point Likert scale (fully, mostly, hardly, not at all); (c) health-related quality of life (HRQoL), measured using the DLQI, ranging from no impairment to very severe impairment (0–30) and grouped into 5 categories according to Hongbo et al. [13] (0–1 = no effect on patient's life, 2–5 = small effect, 6–10 = moderate effect, 11–20 = very large effect, 21–30 = extremely large effect).

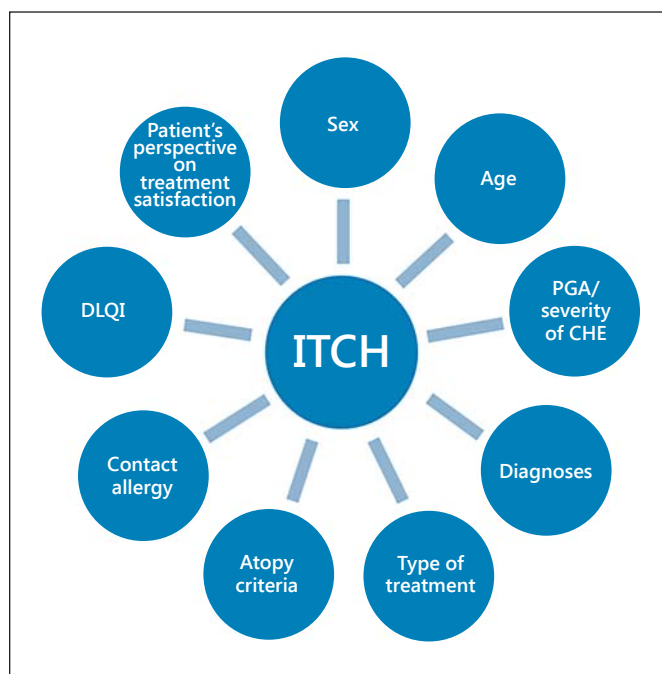


Fig. 1. Variables associated with itch in patients with CHE explored in correlation analysis.

Statistical analyses were performed using SPSS (version 20) for Windows. Nominal and ordinal data were analyzed by computing absolute (n) and relative frequencies (%). Continuous variables were analyzed by computing mean and standard deviation (SD). Statistical analysis was done in two steps. First χ^2 statistics were used to identify

Statistical Analyses

A Microsoft Access 2003 database was used for data entry. Statistical analyses were performed using SPSS (version 20) for Windows. Nominal and ordinal data were analyzed by computing absolute (n) and relative frequencies (%). Continuous variables were analyzed by computing mean and standard deviation (SD). Statistical analysis was done in two steps. First χ^2 statistics were used to identify

Table 1. Descriptive analysis of factors associated with itch in patients with CHE in the whole sample

Variable	%	n	Variable	%	n
Sex (n = 1,051)			Contact allergy (n = 1,028)		
Male	46.4	488	No	52.8	543
Female	53.6	563	Yes	47.2	485
Age (n = 1,051)			Treatment (n = 1,050)		
17–25	10.3	108	Systemic treatment		
26–45	29.8	313	No	50.8	533
46–64	51.7	543	Yes	49.2	517
≥65	8.2	86	UV phototherapy		
PGA (n = 1,049)			No	57.0	599
Clear	2.0	21	Yes	43.0	451
Almost clear	9.5	100	Patient's perspective on treatment		
Moderate	23.3	244	Therapy perceived as burdensome (n = 1,011)		
Severe	39.7	416	Not at all	36.1	365
Very severe	25.5	268	A little	38.0	384
Self-assessed severity (n = 1,032)			A lot	16.7	169
0–1 (clear)	5.4	56	Very much	9.2	93
>1–3	23.9	247	Therapy being time-consuming (n = 1,009)		
>3–7	45.8	473	Not at all	30.9	312
>7–9	17.3	179	A little	38.9	393
>9–10 (very severe)	7.5	77	A lot	20.8	210
Itch (n = 1,049)			Very much	9.3	94
None	21.9	230	Experience of unpleasant side effects (n = 988)		
Mild	29.6	311	Not at all	52.5	519
Moderate	22.2	233	A little	26.8	265
Severe	26.2	275	A lot	14.3	141
Diagnoses (n = 1,051)			Very much	6.4	63
Irritant contact dermatitis	59.0	620	Realization of treatment recommendations (n = 1,013)		
Atopic HE	36.3	382	Fully	34.2	346
Hyperkeratotic fissured eczema	36.5	384	Mostly	58.5	593
Vesicular HE	29.3	308	Hardly	6.0	61
Allergic contact dermatitis	17.4	183	Not at all	1.3	13
Fingertip dermatitis	7.7	81	DLQI (n = 1,027)		
Other	2.0	21	No effect (0–1)	9.7	100
Atopic skin diathesis (n = 1,045)			Small effect (2–5)	26.5	272
No/unlikely/unclear	54.9	577	Moderate effect (6–10)	30.6	314
Yes	44.5	468	Very large effect (11–20)	27.8	285
			Extremely large effect (21–30)	5.5	56

tify variables that were significantly associated with itch and severity of itch in univariate analysis. *p* values <0.05 were considered significant. In a second step those variables that were significantly associated with the presence of itch and itch severity respectively were entered into multivariate logistic regression models. Adjusted odds ratios with corresponding 95% confidence intervals were computed.

Results

A description of the sample in terms of sociodemographic and clinical characteristics is provided in table 1. More than half of the patients were female. The mean age

was around 48 years (SD 13.8). Around 78% (n = 819) of the patients were affected by itch. Of those affected by the symptom, 38% (n = 311) reported mild, 28% (n = 233) moderate and 34% (n = 275) severe itching.

Factors Associated with the Presence of Itch

Univariate Analysis. As shown in table 2, we found significant associations between the presence of itch and sex, age, PGA, self-assessed severity of CHE, atopic skin diathesis, therapy perceived as burdensome, experience of unpleasant side effects, realization of treatment recommendations and HRQoL.

Table 2. Presence of itch according to investigated variables (univariate analysis)

Variable	Itching, % (n)	p value	Variable	Itching, % (n)	p value
Sex (n = 1,049)		0.031	Systemic treatment		
Male	75.1 (365)		12 months prior to inclusion (n = 1,048)		0.247
Female	80.6 (454)		No	79.5 (423)	
Age (n = 1,048)		0.001	Yes	76.6 (395)	
17–25	91.7 (99)		UV phototherapy		
26–45	80.1 (250)		12 months prior to inclusion (n = 1,048)		0.097
46–64	75.3 (408)		No	79.9 (477)	
≥65	70.9 (61)		Yes	75.6 (341)	
PGA (n = 1,048)		<0.001	Therapy perceived as burdensome (n = 1,009)		0.001
Clear	38.1 (8)		Not at all	73.9 (269)	
Almost clear	51.0 (51)		A little	77.3 (296)	
Moderate	71.2 (173)		A lot	84.0 (142)	
Severe	83.2 (346)		Very much	90.3 (84)	
Very severe	89.6 (240)		Therapy being time-consuming (n = 1,007)		0.287
Self-assessed severity (n = 1,030)		<0.001	Not at all	78.8 (245)	
0–1 (clear)	55.4 (31)		A little	76.0 (298)	
>1–3	64.4 (159)		A lot	78.1 (164)	
>3–7	83.0 (391)		Very much	85.1 (80)	
>7–9	88.8 (159)		Experience of unpleasant side effects (n = 986)		0.038
>9–10 (very severe)	88.3 (68)		Not at all	78.7 (407)	
Atopic skin diathesis (n = 1,043)		0.004	A little	74.0 (196)	
No/unlikely/unclear	74.7 (430)		A lot	83.7 (118)	
Yes	82.0 (383)		Very much	87.3 (55)	
Contact allergy (n = 1,026)		0.466	Realization of treatment recommendations (n = 1,020)		<0.001
No	77.1 (417)		Fully	68.8 (161)	
Yes	79.0 (383)		Mostly	77.8 (360)	
Diagnoses (n = 1,049)			Hardly	84.4 (217)	
Irritant contact dermatitis	78.1 (336)	0.966	Not at all	90.9 (60)	
Atopic HE	85.3 (326)	<0.001	DLQI (n = 1,025)		<0.001
Hyperkeratotic fissured eczema	72.8 (279)	0.002	No effect (0–1)	54.5 (54)	
Vesicular HE	83.8 (258)	0.004	Small effect (2–5)	70.2 (191)	
Allergic contact dermatitis	86.3 (158)	0.003	Moderate effect (6–10)	81.2 (254)	
Fingertip dermatitis	79.0 (64)	0.832	Very large effect (11–20)	86.7 (247)	
Other	66.7 (14)	0.196	Extremely large effect (21–30)	92.9 (52)	

Multivariate Analysis. Findings from multivariate analyses (table 3) revealed significant positive associations between age groups 17–25 years and 26–45 years, very severe, severe or moderately severe CHE as well as a moderate or very large impairment of QoL and itch. The association between presence of itch and DLQI clearly decreased after adjustment. A significant inverse association was found between experiencing unpleasant side effects ‘a little’ and itch.

Factors Associated with the Severity of Itch

Univariate Analysis. We found significant associations between the severity of itch and PGA, self-assessed sever-

ity of CHE, atopic skin diathesis, therapy perceived as burdensome, therapy perceived as time-consuming, realization of treatment recommendations and DLQI (table 4).

Multivariate Analysis. Multivariate logistic regression (table 5) revealed that the direction of association remained the same for the variables PGA, atopy, experience of unpleasant side effects and DLQI. However, only the presence of atopic skin diathesis, hardly any realization of treatment recommendation as well as a very and extremely large impairment of QoL were significantly associated with severity of itch.

Table 3. Results from multivariate logistic regression (outcome: presence of itch)

Variable	Adjusted OR (95% CI)
Sex (n = 1,049)	
Male	1.0
Female	1.29 (0.91–1.84)
Age (n = 1,048)	
17–25	4.68 (1.76–12.46)
26–45	2.02 (1.05–3.87)
46–64	1.65 (0.90–3.03)
≥65	1.0
PGA (n = 1,048)	
Clear	1.0
Almost clear	2.43 (0.81–7.31)
Moderate	4.43 (1.51–13.02)
Severe	6.14 (2.07–18.16)
Very severe	9.34 (2.91–29.97)
Self-assessed severity (n = 1,030)	
0–1 (clear)	1.0
>1–3	1.00 (0.50–2.00)
>3–7	1.70 (0.81–3.58)
>7–9	2.46 (0.97–6.24)
>9–10 (very severe)	2.08 (0.63–6.87)
Atopic skin diathesis (n = 1,043)	
No/unlikely/unclear	1.0
Yes	1.29 (0.90–1.86)
Therapy perceived as burdensome (n = 1,009)	
Not at all	1.0
A little	1.16 (0.76–1.78)
A lot	1.47 (0.77–2.80)
Very much	2.48 (0.92–6.67)
Experience of unpleasant side effects (n = 986)	
Not at all	1.0
A little	0.51 (0.33–0.79)
A lot	0.58 (0.30–1.14)
Very much	0.51 (0.18–1.44)
Realization of treatment recommendations (n = 1,020)	
Fully	1.0
Mostly	1.18 (0.82–1.71)
Hardly	2.68 (0.76–9.41)
Not at all	0.44 (0.12–1.63)
DLQI (n = 1,025)	
No effect (0–1)	1.0
Small effect (2–5)	1.39 (0.80–2.41)
Moderate effect (6–10)	1.87 (1.03–3.41)
Very large effect (11–20)	2.05 (1.02–4.10)
Extremely large effect (21–30)	2.84 (0.83–9.79)

CI = Confidence interval; OR = odds ratio. Bold indicates $p < 0.05$.

Discussion

To our knowledge this is the first study investigating the prevalence and severity of itch in patients affected by CHE. The CARPE registry provides data on sociodemographic, clinical and treatment-related characteristics of patients with CHE, which allows the investigation of co-factors of itch in CHE patients.

Presence of Itch

Our study showed that younger patients were more likely to report itching than older participants, with patients aged 17–25 years being most affected by itch, followed by the age group 26–45 years. This is in contrast to most findings from previous studies on itch, where older people (especially those between 50 and 60 years) tended to be more affected by itch [4, 6, 7, 14]. One population-based study on chronic itch from Germany found a significant positive association between itch and the age group 31–40 years [7]. Results from our multivariate analysis did not show a significant difference between the presence of itch and sex, meaning that women and men with CHE are equally affected by itch. This is in contrast to results from most of the studies on itch considering sex [4, 5, 15–17]. A cross-sectional study with adults on self-reported skin morbidity in Oslo, Norway showed that women reported itching more often than men throughout all age groups [15].

Dermatologist-assessed severity of CHE was significantly associated with the presence of itch in a linear manner. Since no studies focusing on the presence and severity of itch in patients with HE have yet been conducted, further evidence is needed to confirm our results.

Our results show that the experience of unpleasant side effects indicated by the patients as ‘a little’ was associated with less itch. Patients reporting little experience of unpleasant side effects may be on effective treatment not imposing a heavy burden on them. If this is the case, itch may also be well controlled or not present. However, this remains speculative and the finding needs to be verified in future studies.

Moderate and extremely large effects on QoL, measured by the DLQI, were significantly associated with the presence of itch in patients with CHE. A study analyzing different dermatological diseases found a significant correlation between the presence of itch and a lower QoL measured by DLQI [18]. A Turkish study investigated a significant relationship between itch and DLQI scores ≥ 10 in psoriasis patients [19]. Patients affected by pemphigus vulgaris showed significantly increased DLQI scores when itching was reported [20]. Similar results

Table 4. Severity of itch according to the investigated variables (univariate analysis)

Variable	Severe itching, % (n)	p value	Variable	Severe itching, % (n)	p value
Sex (n = 819)		0.155	UV phototherapy		
Male	31.0 (113)		12 months prior to inclusion (n = 818)		0.385
Female	35.7 (162)		No	32.3 (154)	
Age (n = 818)		0.781	Yes	35.2 (120)	
17–25	36.4 (36)		Therapy perceived as burdensome (n = 791)		<0.001
26–45	33.6 (84)		Not at all	34.9 (94)	
46–64	32.4 (132)		A little	26.7 (79)	
≥65	37.7 (23)		A lot	28.9 (41)	
PGA (n = 818)		<0.001	Very much	53.6 (45)	
Clear	25.0 (2)		Therapy being time-consuming (n = 787)		0.010
Almost clear	17.6 (9)		Not at all	35.5 (87)	
Moderate	19.7 (34)		A little	25.8 (77)	
Severe	30.1 (104)		A lot	39.6 (65)	
Very severe	52.5 (126)		Very much	36.2 (29)	
Self-assessed severity (n = 808)		<0.001	Experience of unpleasant side effects (n = 776)		0.037
0–1 (clear)	16.1 (5)		Not at all	29.7 (121)	
>1–3	18.2 (29)		A little	33.7 (66)	
>3–7	32.2 (126)		A lot	32.2 (38)	
>7–9	42.1 (67)		Very much	49.1 (27)	
>9–10 (very severe)	63.2 (43)		Realization of treatment recommendations (n = 792)		<0.001
Atopic skin diathesis (n = 813)		0.004	Fully	27.2 (70)	
No/unlikely/unclear	28.8 (124)		Mostly	32.8 (154)	
Yes	38.4 (147)		Hardly	52.6 (30)	
Contact allergy (n = 800)		0.580	Not at all	66.7 (6)	
No	32.6 (136)		DLQI (n = 798)		<0.001
Yes	34.5 (132)		No effect (0–1)	14.8 (8)	
Systemic treatment			Small effect (2–5)	20.9 (40)	
12 months prior to inclusion (n = 818)		0.131	Moderate effect (6–10)	27.2 (69)	
No	31.2 (132)		Very large effect (11–20)	45.3 (112)	
Yes	36.2 (143)		Extremely large effect (21–30)	65.4 (34)	

were found in psoriatic patients with itch, who had significantly decreased HRQoL compared to patients not affected by itch [21]. A cross-sectional study with patients affected by systemic sclerosis from Canada measured QoL according to the 36-Item Short Form Health Survey. Patients suffering from pruritus had a significantly greater negative impact on QoL than patients without pruritus [22]. A cross-sectional study in 13 European countries with 250 consecutive patients and 125 healthy controls demonstrated that patients reporting itch were more depressed than those without itch, had more anxiety and a larger impact on QoL measured by the DLQI [23].

Severity of Itch

Our study demonstrates that patients with atopy seem to be more likely to suffer from a severe form of itching

than patients with no or an uncertain atopy. It is well known that atopic hand dermatitis is very frequently accompanied by itch, but so far there are no studies that specifically address this issue. A web-based questionnaire study on itch characteristics showed that atopic dermatitis responders experienced itch more frequently and more intensely when compared to subjects suffering from psoriasis [24]. In patients with occupational CHE, those with irritant contact dermatitis reported significantly less intense itching than patients with irritant-induced atopic HE [16]. Patients with severe CHE reported more intense itching than patients with non-severe CHE, and individuals with atopic dermatitis had higher visual analogue scale scores for itch than patients with exclusive HE [16]. This confirms our results showing a significant association between atopic diathesis and severe itch.

Table 5. Results from multivariate logistic regression (outcome: severe itching)

Variable	Adjusted OR (95% CI)
PGA (n = 818)	
Clear	1.0
Almost clear	0.99 (0.10–10.27)
Moderate	0.89 (0.09–8.74)
Severe	1.26 (0.13–12.24)
Very severe	2.16 (0.22–21.06)
Self-assessed severity (n = 808)	
0–1 (clear)	1.0
>1–3	0.96 (0.28–3.29)
>3–7	1.40 (0.41–4.79)
>7–9	1.37 (0.38–4.50)
>9–10 (very severe)	2.49 (0.62–10.01)
Atopic skin diathesis (n = 813)	
No/unlikely/unclear	1.0
Yes	1.43 (1.01–2.03)
Therapy perceived as burdensome (n = 791)	
Not at all	1.0
A little	0.73 (0.45–1.17)
A lot	0.54 (0.28–1.04)
Very much	1.15 (0.52–2.57)
Therapy being time-consuming (n = 787)	
Not at all	1.0
A little	0.65 (0.41–1.04)
A lot	0.76 (0.42–1.40)
Very much	0.33 (0.15–0.73)
Experience of unpleasant side effects (n = 776)	
Not at all	1.0
A little	1.31 (0.82–2.11)
A lot	0.83 (0.44–1.56)
Very much	1.36 (0.56–3.29)
Realization of treatment recommendations (n = 792)	
Fully	1.0
Mostly	1.20 (0.82–1.77)
Hardly	2.03 (1.01–4.06)
Not at all	1.98 (0.40–9.79)
DLQI (n = 798)	
No effect (0–1)	1.0
Small effect (2–5)	1.26 (0.52–3.02)
Moderate effect (6–10)	1.53 (0.64–3.65)
Very large effect (11–20)	3.00 (1.21–7.37)
Extremely large effect (21–30)	7.06 (2.30–21.64)

CI = Confidence interval; OR = odds ratio. Bold indicates $p < 0.05$.

Difficulties in the realization of treatment recommendations were associated with severe itching, suggesting that the previous treatment of CHE had not sufficiently addressed itching. Another explanation may be that severe CHE is associated with more intense itch [16], which

can complicate its treatment. One may also speculate that physicians tend to underestimate itch in CHE, leading to a reduced awareness and recording of this symptom, also in clinical studies.

Severity of itch in patients with CHE was significantly associated with impaired QoL (assessed by the DLQI) in a linear manner. Similar results were shown in patient populations affected by other skin diseases accompanied by itch, such as urticaria [25] and psoriasis [21, 26, 27]. One study investigating psychological factors associated with hand dermatoses showed that high stress responders stated significantly higher values for itch [28].

Limitations

In the CARPE registry, itch is only measured as one variable. As solely the presence of itch was asked, the results presented here refer to current itch. Details like course, localization and accompanying sensations like pain, burning or stinging would have been of interest as well. An assessment of itch according to the visual analogue scale is recommended for studies on itch [29, 30], but we relied on itch measured by a verbal rating scale. All findings presented in this paper are only representative for patients with CHE refractory to topical treatment. Because of the cross-sectional design of our study, caution needs to be exercised concerning suggestions about a causal relationship between the presence or severity of itch and the investigated variables. Further prospective and longitudinal studies may permit to establish a causal relationship. Our current analyses should be considered exploratory in nature. Nevertheless, these are the first findings on a variety of factors associated with the presence and severity of itch in patients with CHE.

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References

- 1 Diepgen TL, Andersen KE, Brandao FM, Bruze M, Bruynzeel DP, Frosch P, et al: Hand eczema classification: a cross-sectional, multi-centre study of the aetiology and morphology of hand eczema. *Br J Dermatol* 2009;160:353–358.
- 2 Coenraads PJ: Hand eczema. *N Engl J Med* 2012;367:1829–1837.
- 3 Weisshaar E, Kallen U, Weiss M: ‘The itching hand’ – important differential diagnoses and treatment. *J Dtsch Dermatol Ges* 2013;11:31–42.
- 4 Weisshaar E, Apfelbacher C, Jager G, Zimmermann E, Bruckner T, Diepgen TL, et al: Pruritus as a leading symptom: clinical characteristics and quality of life in German and Ugandan patients. *Br J Dermatol* 2006;155:957–964.
- 5 Weisshaar E, Dalgard F: Epidemiology of itch: adding to the burden of skin morbidity. *Acta Derm Venereol* 2009;89:339–350.
- 6 Mattered U, Apfelbacher CJ, Vogelgsang L, Loerbroks A, Weisshaar E: Incidence and determinants of chronic pruritus: a population-based cohort study. *Acta Derm Venereol* 2013;93:532–537.
- 7 Mattered U, Apfelbacher CJ, Loerbroks A, Schwarzer T, Buttner M, Ofenloch R, et al: Prevalence, correlates and characteristics of chronic pruritus: a population-based cross-sectional study. *Acta Derm Venereol* 2011;91:674–679.
- 8 Halvorsen JA, Kupfer A, Dalgard F: The prevalence and intensity of itch among dermatological patients in 13 European countries. *Acta Derm Venereol* 2013;93:620–621.
- 9 Apfelbacher CJ, Akst W, Molin S, Schmitt J, Bauer A, Weisshaar E, et al: CARPE: a registry project of the German Dermatological Society (DDG) for the characterization and care of chronic hand eczema. *J Dtsch Dermatol Ges* 2011;9:682–688.
- 10 Apfelbacher C, Molin S, Weisshaar E, Bauer A, Elsner P, Mahler V, et al: Characteristics and provision of care in patients with chronic hand eczema: updated data from the CARPE registry. *Acta Derm Venereol* 2014;94:163–167.
- 11 Coenraads PJ, Van Der Walle H, Thestrup-Pedersen K, Ruzicka T, Dreno B, De La Loge C, et al: Construction and validation of a photographic guide for assessing severity of chronic hand dermatitis. *Br J Dermatol* 2005;152:296–301.
- 12 Diepgen TL, Sauerbrei W, Fartasch M: Development and validation of diagnostic scores for atopic dermatitis incorporating criteria of data quality and practical usefulness. *J Clin Epidemiol* 1996;49:1031–1038.
- 13 Hongbo Y, Thomas CL, Harrison MA, Salek MS, Finlay AY: Translating the science of quality of life into practice: what do dermatology life quality index scores mean? *J Invest Dermatol* 2005;125:659–664.
- 14 Sommer F, Hensen P, Bockenholt B, Metzke D, Luger TA, Stander S: Underlying diseases and co-factors in patients with severe chronic pruritus: a 3-year retrospective study. *Acta Derm Venereol* 2007;87:510–516.
- 15 Dalgard F, Svensson A, Holm JO, Sundby J: Self-reported skin morbidity in Oslo. Associations with sociodemographic factors among adults in a cross-sectional study. *Br J Dermatol* 2004;151:452–457.
- 16 Boehm D, Schmid-Ott G, Finkeldey F, John SM, Dwinger C, Werfel T, et al: Anxiety, depression and impaired health-related quality of life in patients with occupational hand eczema. *Contact Dermatitis* 2012;67:184–192.
- 17 Stander S, Stumpf A, Osada N, Wilp S, Chatzigeorgakidis E, Pfliegerer B: Gender differences in chronic pruritus: women present different morbidity, more scratch lesions and higher burden. *Br J Dermatol* 2013;168:1273–1280.
- 18 Verhoeven EW, Kraaimaat FW, van de Kerkhof PC, van Weel C, Duller P, van der Valk PG, et al: Prevalence of physical symptoms of itch, pain and fatigue in patients with skin diseases in general practice. *Br J Dermatol* 2007;156:1346–1349.
- 19 Bilac C, Ermertcan AT, Bilac DB, Devenci A, Horasan GD: The relationship between symptoms and patient characteristics among psoriasis patients. *Indian J Dermatol Venereol Leprol* 2009;75:551.
- 20 Ghodsi SZ, Chams-Davatchi C, Daneshpazhooh M, Valikhani M, Esmaili N: Quality of life and psychological status of patients with pemphigus vulgaris using Dermatology Life Quality Index and General Health Questionnaires. *J Dermatol* 2012;39:141–144.
- 21 Reich A, Hrehorow E, Szepletowski JC: Pruritus is an important factor negatively influencing the well-being of psoriatic patients. *Acta Derm Venereol* 2010;90:257–263.
- 22 El-Baalbaki G, Razykov I, Hudson M, Bassel M, Baron M, Thombs BD, et al: Association of pruritus with quality of life and disability in systemic sclerosis. *Arthritis Care Res (Hoboken)* 2010;62:1489–1495.
- 23 Dalgard F, Kupfer J, Halvorsen JA: The burden of itch among dermatological patients in Europe. *Acta Derm Venereol* 2013;93:607–608.
- 24 O’Neill JL, Chan YH, Rapp SR, Yosipovitch G: Differences in itch characteristics between psoriasis and atopic dermatitis patients: results of a web-based questionnaire. *Acta Derm Venereol* 2011;91:537–540.
- 25 Zachariae R, Lei U, Haedersdal M, Zachariae C: Itch severity and quality of life in patients with pruritus: preliminary validity of a Danish adaptation of the itch severity scale. *Acta Derm Venereol* 2012;92:508–514.
- 26 Mabuchi T, Yamaoka H, Kojima T, Ikoma N, Akasaka E, Ozawa A: Psoriasis affects patient’s quality of life more seriously in female than in male in Japan. *Tokai J Exp Clin Med* 2012;37:84–88.
- 27 Nyunt WW, Low WY, Ismail R, Sockalingam S, Min AK: Determinants of health-related quality of life in psoriasis patients in Malaysia. *Asia Pac J Public Health* 2013, Epub ahead of print.
- 28 Niemeier V, Nippesen M, Kupfer J, Schill WB, Gieler U: Psychological factors associated with hand dermatoses: which subgroup needs additional psychological care? *Br J Dermatol* 2002;146:1031–1037.
- 29 Reich A, Heisig M, Phan NQ, Taneda K, Takamori K, Takeuchi S, et al: Visual analogue scale: evaluation of the instrument for the assessment of pruritus. *Acta Derm Venereol* 2012;92:497–501.
- 30 Phan NQ, Blome C, Fritz F, Gerss J, Reich A, Ebata T, et al: Assessment of pruritus intensity: prospective study on validity and reliability of the visual analogue scale, numerical rating scale and verbal rating scale in 471 patients with chronic pruritus. *Acta Derm Venereol* 2012;92:502–507.