

# Itch and pain in atopic dermatitis and prurigo nodularis

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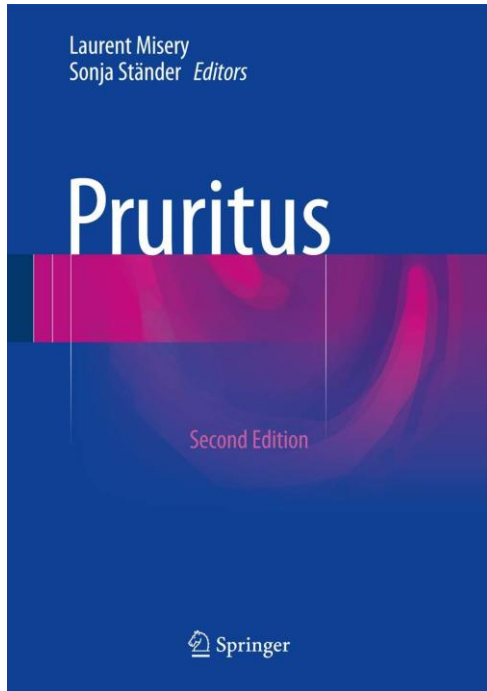
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## DISCLOSURES

- Abbvie
- Almirall
- Amgen
- Apogee
- AstraZeneca
- Beiersdorf
- Bioderma
- Biogen
- Cara
- Clexio
- Clarins
- Estée Lauder
- Expanscience
- Galderma
- Gilbert
- GSK
- Incyte

- Ipsen
- Johnson&Johnson
- Kiniksa
- L'Oréal
- Leo
- Lilly
- Menlo
- Mirum
- Novartis
- Pfizer
- Sanofi
- Trevi
- UCB
- Uriage
- Vifor

# CHRONIC PRURIGO

A distinct disease defined by the presence of:

chronic pruritus for at least 6 weeks,

a history and/or signs of repeated scratching and multiple localized or generalized pruritic skin lesions (whitish or pinkish papules, nodules and/or plaques)

due to neural sensitisation to pruritus and the development of a vicious circle of pruritus and scratching, and the initial pruritus may be of any origin

*EADV European Prurigo Project: expert consensus on the definition, classification and terminology of chronic prurigo*  
*Pereira MP et al., JEADV 2017*

*IFSI guideline on chronic prurigo including prurigo nodularis*  
*Ständer S et al, Itch, 2020*

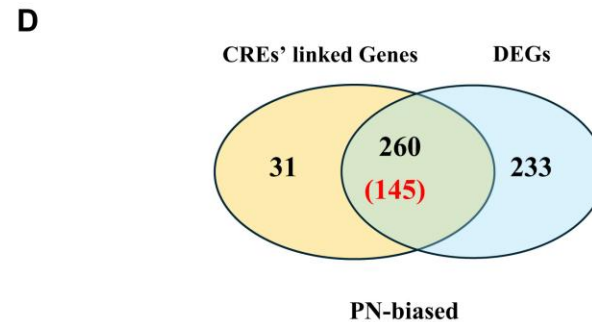
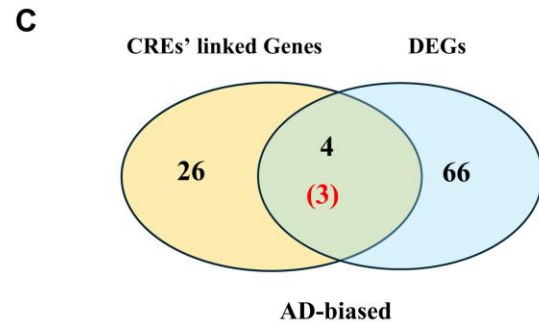
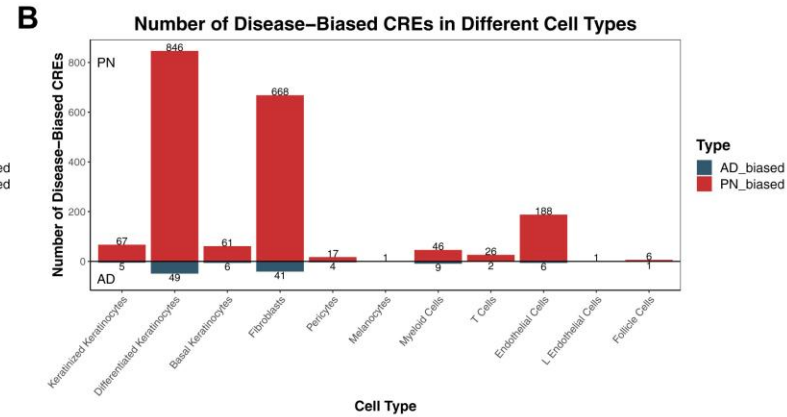
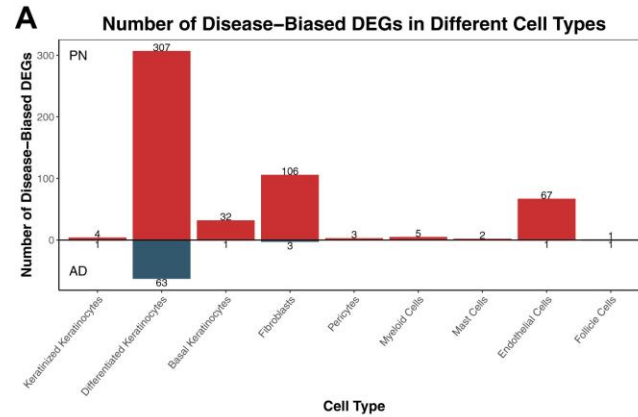
*Chronic prurigo*  
*Misery L, Br J Dermatol 2022*



# Atopic dermatitis and prurigo nodularis

- Both Th2-related diseases, with different cytokinic or genomic profiles
- Different clinical symptoms
- Chronic prurigo is not consecutive to atopic dermatitis in most cases.
- Although pruritus and pain are usually antagonistic (pain inhibits itch), they frequently coexist in these two conditions. This is due to abnormalities in the skin barrier, but mainly to scratching lesions and the neuropathic nature of pruritus and skin pain.
- Pruritus and skin pain have a major impact on quality of life and are often the primary concern for patients. They contribute to sleep disorders, depression and anxiety, which in turn exacerbate these unpleasant sensations.
- That is why it is very important to break the vicious cycle of pruritus-scratching and effectively treat atopic dermatitis and chronic prurigo.

# 2 different cytokinic or genomic profiles



# 5 clinical subtypes of chronic prurigo



Papular prurigo



Ombilicated prurigo



Plaque prurigo



Linear prurigo



Nodular prurigo

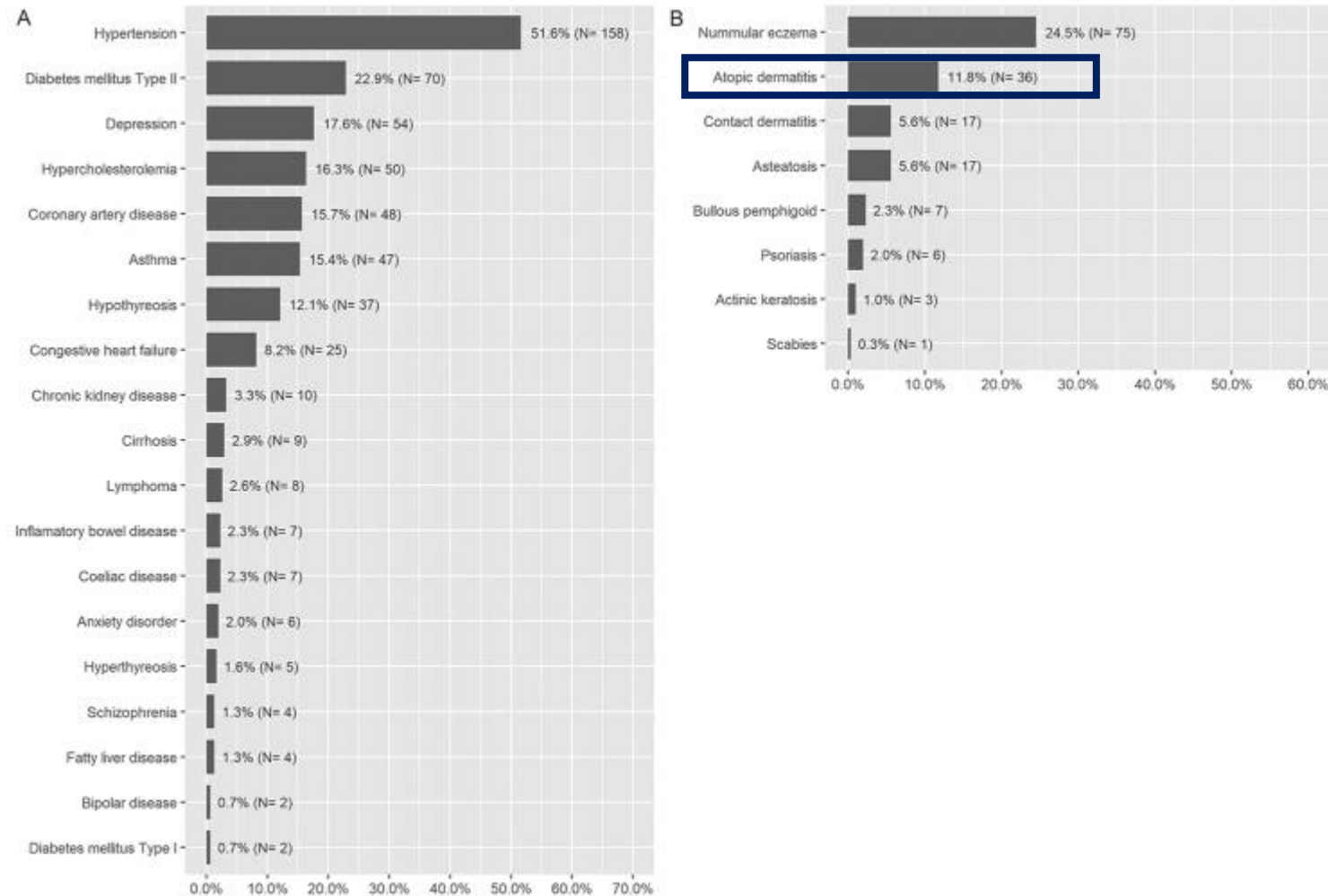
EADV European Prurigo Project: expert consensus on the definition, classification and terminology of chronic prurigo

Pereira et al., JEADV 2017

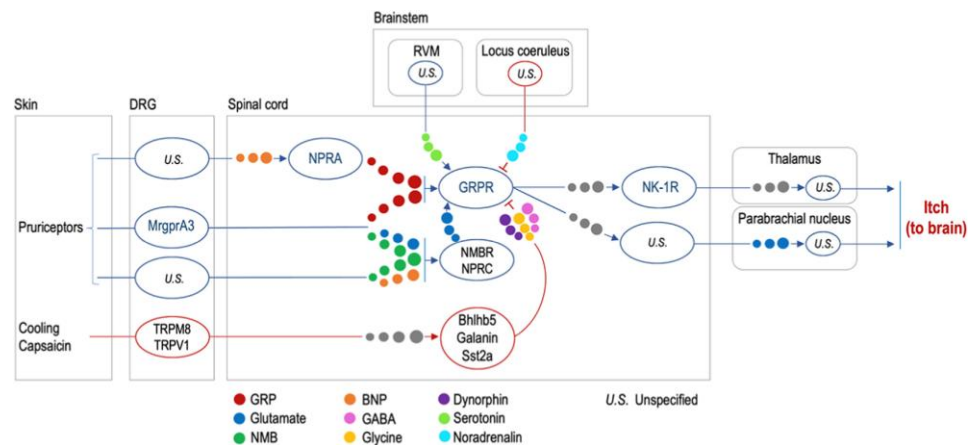
Position statement: linear prurigo is a subtype of chronic prurigo

Pereira et al., JEADV 2019

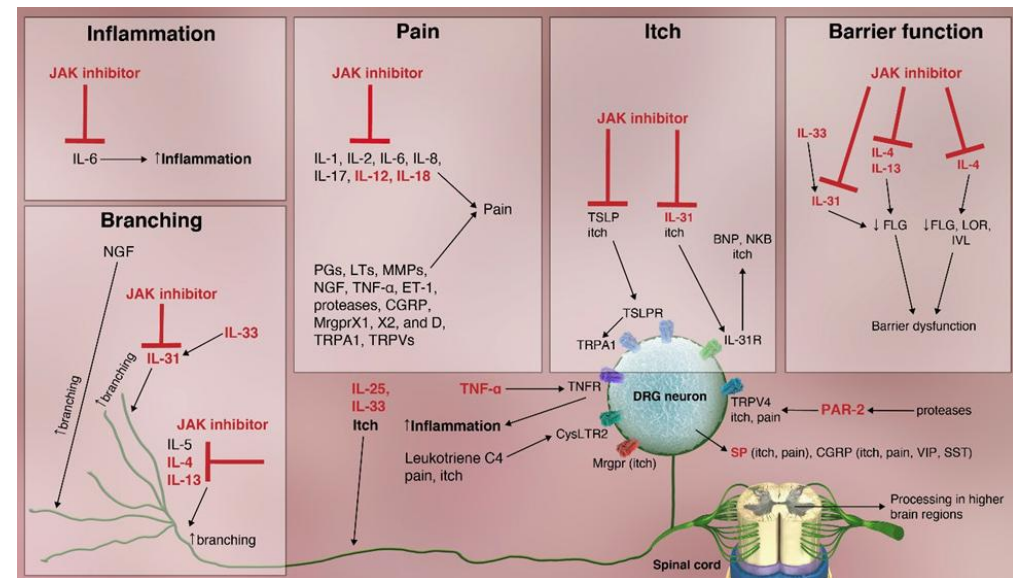
# Comorbidities of chronic prurigo



# Itch and are commonly antagonists but they coexist in AD and PN



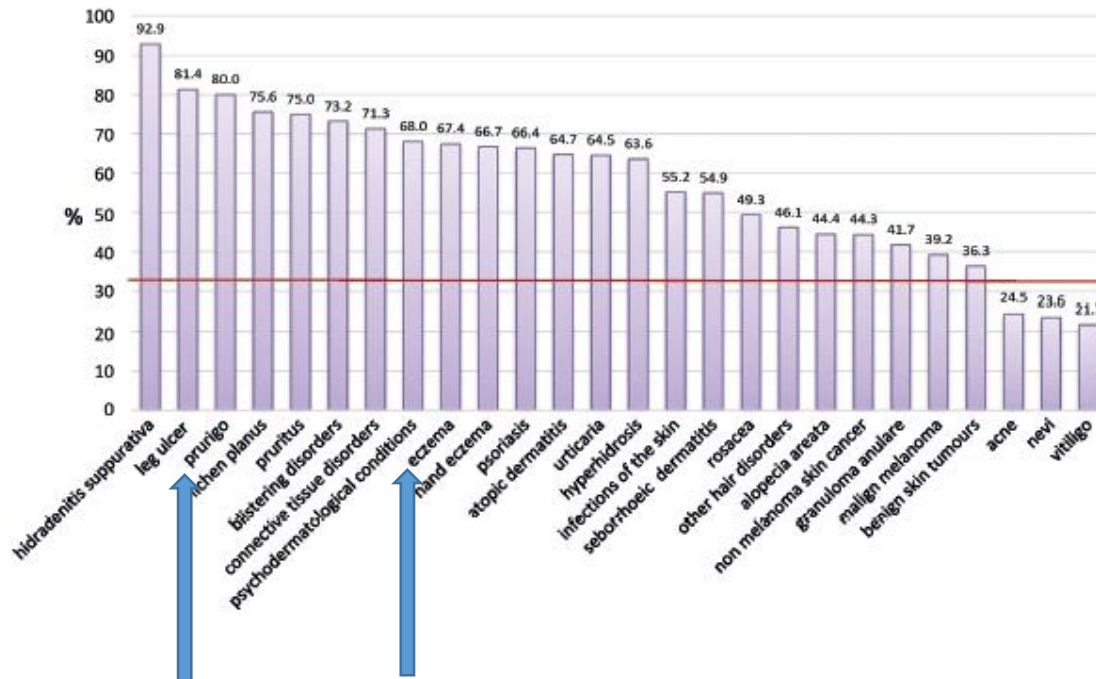
Misery L. et al.  
J Allergy Clin Immunol 2023;152:11-23



Kwatra SG et al.  
Clin Translat Immunol 2022;e1390



# Pain/discomfort in skin diseases



**Fig. 1. Prevalence of positive answers ("moderate" or "extreme") to the question on the presence of pain/discomfort of the EuroQoL-5D (EQ-5D) questionnaire in different skin conditions.** Data from 3,509 outpatients collected from November 2011 to February 2013. Red line indicates the prevalence of positive answers in controls.

**Table II. Prevalence of patients experiencing pain/discomfort in the study population according to psychological conditions and quality of life**

Variable	n (%) <sup>*</sup>	OR (95% CI)
No depression	2,636 (49.8)	1
Borderline depression	486 (70.8)	<b>2.44 (1.97–3.03)</b>
Clinical depression	347 (77.8)	<b>3.54 (2.69–4.65)</b>
No anxiety	2,173 (47.1)	1
Borderline anxiety	698 (65.9)	<b>2.17 (1.81–2.61)</b>
Clinical anxiety	590 (73.9)	<b>3.18 (2.59–3.92)</b>
No thoughts of suicide	3,249 (54.2)	1
Thoughts of suicide	234 (73.9)	<b>2.40 (1.76–3.28)</b>
Dermatology Life Quality Index		
No	969 (31.4)	1
Small	919 (49.9)	<b>2.18 (1.80–2.64)</b>
Moderate	680 (65.9)	<b>4.22 (3.41–5.23)</b>
Very large	701 (76.6)	<b>7.16 (5.71–8.99)</b>
Extreme	176 (91.5)	<b>23.48 (13.26–42.23)</b>

Data from 3,509 outpatients collected in 13 European countries from November 2011 to February 2013.

<sup>\*</sup>Totals may vary because of missing values. OR: odds ratio; CI: confidence interval. Bold numbers indicate statistically significant association.

# Occurrence and chronicity of itch in skin diseases

**Table III. Occurrence and chronicity of itch in patients experiencing 1 of 27 different skin diseases and healthy-skin controls. Associations (OR) between the occurrence of itch in patients and occurrence of itch in healthy-skin controls, adjusted for age and sex**

Diagnostic categories (n)	Occurrence n (%), 95% CI	Patients/healthy-skin controls OR (95% CI)	Occurrence of chronic itch overall <sup>a</sup>		Occurrence of chronic itch in those with itch <sup>b</sup>	
			Missing/ out of, n	n (%), 95% CI	Missing/ out of, n	n (%), 95% CI
Patients overall (3,089)	1,664 (53.9), 52.0–55.6	13.5 (10.7–17.0)*	172/3,089	1,065 (36.5), 34.9–38.3	172/1,664	1,065 (71.4), 68.9–73.7
Unclassified pruritus (53)	51 (96.2) 90.4–100	285.4 (67.2–1212.4)*	3/53	39 (78.0), 66.0–88.2	3/51	39 (81.3), 70.2–92.0
Prurigo and related conditions (18)	16 (88.9), 72.2–100.0	85.9 (18.9–389.4)*	0/18	13 (72.2), 50.0–93.3	0/16	13 (81.3), 61.1–100
Atopic dermatitis (150)	129 (86.0), 79.9–91.2	67.0 (40.0–112.0)*	6/150	96 (66.7), 58.6–74.5	6/129	96 (78.0), 70.9–85.2
Hand eczema (124)	102 (82.3), 75.6–88.9	52.7 (31.5–88.0)*	7/124	62 (53.0), 44.3–62.5	7/102	62 (65.3), 55.6–75.0
Other eczemas (197)	153 (77.7), 71.5–83.4	39.4 (26.1–59.6)*	11/197	105 (56.5), 49.5–63.7	11/153	105 (73.9), 66.4–80.6
Urticaria (54)	41 (75.9), 63.3–86.3	37.0 (19.0–71.9)*	5/54	21 (42.9), 30.0–56.2	5/41	21 (58.3), 42.9–73.2
Seborrhoeic dermatitis (54)	40 (74.1), 60.8–85.5	32.9 (17.2–63.0)*	2/54	19 (36.5), 22.5–50.0	2/40	19 (50.0), 34.8–66.0
Psoriasis (567)	399 (70.4), 66.4–74.2	29.82 (22.02–40.39)*	37/567	263 (49.6), 45.0–53.8	37/399	263 (72.7), 68.0–77.0
Bullous diseases (62)	40 (64.5), 53.2–76.2	25.4 (13.4–48.0)*	2/62	23 (38.3), 25.9–50.8	2/40	23 (60.5), 45.0–76.6
Psychodermatological conditions (22)	12 (54.5), 33.4–76.1	13.8 (5.7–33.2)*	2/22	8 (40.0), 20.0–61.9	2/12	8 (80.0), 50.0–100
Granuloma annulare (11)	6 (54.5), 25.0–81.8	12.8 (3.8–43.6)*	0/11	5 (45.5), 18.2–75.0	0/6	5 (83.3), 50.0–100
Connective tissue disorders (79)	41 (51.9), 40.0–62.2	13.2 (7.9–22.3)*	0/79	30 (38.0), 28.0–48.1	0/41	30 (73.2), 58.3–86.8
Infections of the skin (205)	103 (50.2), 43.3–57.0	11.7 (8.2–16.8)*	13/205	59 (30.7), 24.3–37.6	13/103	59 (65.6), 55.7–75.3
Lichen planus (36)	18 (50.0), 33.3–66.7	11.54 (5.6–23.8)*	1/36	14 (40.0), 23.5–55.3	1/18	14 (82.4), 61.1–100
Leg ulcer (103)	48 (46.6), 36.9–56.2	9.0 (5.4–15.3)*	5/103	36 (36.7), 27.5–46.7	5/48	36 (83.7), 71.4–93.7
Hidradenitis suppurativa (40)	18 (45.0), 29.3–61.0	9.8 (5.0–19.0)*	3/40	10 (27.0), 13.2–42.1	3/18	10 (66.7), 41.2–87.5
Others (286)	126 (44.1), 38.2–50.0	8.6 (6.2–11.9)*	17/286	70 (26.0), 20.6–31.4	17/126	70 (64.2), 54.8–72.9
Rosacea (54)	23 (42.6), 29.1–55.4	8.9 (4.9–16.1)*	1/54	11 (20.8), 10.4–32.0	1/23	11 (50.0), 29.2–71.9
Other hair conditions (62)	25 (40.3), 27.4–51.8	8.1 (4.6–14.2)*	6/62	15 (26.8), 15.8–38.2	6/25	15 (78.9), 58.6–95.0
Alopecia areata (22)	8 (36.4), 17.4–57.1	6.6 (2.7–16.2)*	1/22	7 (33.3), 13.6–55.0	1/8	7 (100), 100–100
Non-melanoma skin cancer (304)	105 (34.4), 28.9–39.7	6.1 (3.9–9.5)*	26/304	64 (23.0), 18.1–28.0	26/105	64 (81.0), 72.2–89.3
Acne (187)	57 (30.5), 24.2–37.3	5.6 (3.5–8.9)*	6/187	42 (23.2), 17.3–29.5	6/57	42 (82.4), 70.6–92.5
Hyperhidrosis (11)	3 (27.3), 0–54.5	4.4 (1.1–17.2)*	0/11	2 (18.2), 0–45.5	0/3	2 (66.7), 0–100
Vitiligo (23)	6 (26.1), 8.7–43.5	4.3 (1.6–11.5)*	0/23	2 (8.7), 0–21.7	0/6	2 (33.3), 0–75.0
Benign skin tumours (131)	31 (23.7), 16.8–30.9	3.7 (2.3–5.9)*	3/131	14 (10.9), 5.4–16.8	3/31	14 (50.0), 31.4–66.7
Malignant melanoma (57)	13 (22.8), 12.3–33.9	3.3 (1.6–6.6)*	2/57	9 (16.4), 6.9–26.4	2/13	9 (81.8), 57.1–100
Nevi (141)	28 (19.9), 13.0–26.6	2.9 (1.8–4.6)*	10/141	12 (9.2), 4.8–15.0	10/28	12 (66.7), 43.8–88.9
Healthy-skin controls (1094)	88 (8.0), 6.6–9.8	1	19/1,094	51 (4.7), 3.5–6.1	19/88	51 (73.9), 62.7–84.4

Data consists of patients with 1 dermatological diagnosis, patients with 2 and more dermatological diseases were excluded from these analyses; n = 3,089. The conditions are ranked according to itch occurrences. (Exception: data of the group of all patients (patients overall) are presented first and data of healthy-skin controls are presented last). \*Occurrence rates significantly differed between patients and healthy-skin controls ( $p < 0.05$ ; alpha-corrected after Holm). <sup>a</sup>Occurrence of chronicity in the whole group. <sup>b</sup>Occurrence of chronicity only among those who report itch. OR: odds ratio; CI: confidence interval.

# Impact of itch on mental health

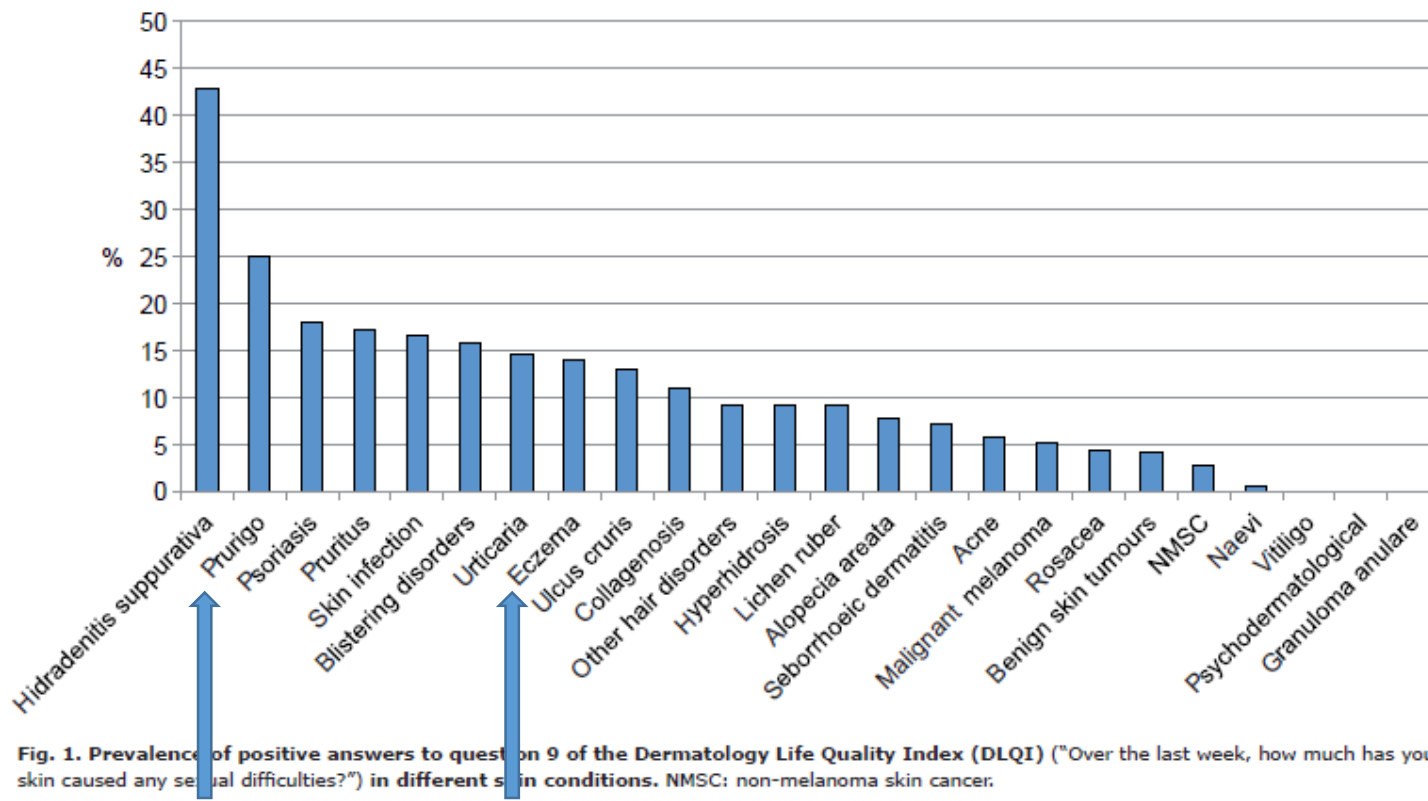
**Table 2. Multiple Logistic Regression Analysis for Presence and Chronicity of Itch and Linear Regression Analysis for Intensity of Itch**

Variable	Itch presence ( <i>n</i> = 4,141)	Itch chronicity ( <i>n</i> = 1,600)	Itch intensity ( <i>n</i> = 1,767)	
	Adjusted OR <sup>1</sup> (95 % CI)	Adjusted OR <sup>1</sup> (95 % CI)	Unstandardized Coefficient <i>b</i> (95 % CI)	Standardized Coefficient $\beta$
Control (0)	1.0 (ref)	1.0 (ref)	1.63 (1.07–2.19)	0.132
Patient (1)	11.12 (8.70–14.21)	0.78 (0.43–1.39)		
No depression (0)	1.0 (ref)	1.0 (ref)	0.35 (–0.02 to 0.73)	0.048
Clinical depression (1)	1.53 (1.15–2.02)	0.75 (0.53–1.07)		
No anxiety (0)	1.0 (ref)	1.0 (ref)	0.37 (0.05–0.69)	0.060
Clinical anxiety (1)	1.07 (0.86–1.33)	0.93 (0.69–1.26)		
No suicidal ideation (0)	1.0 (ref)	1.0 (ref)	0.20 (–0.14 to 0.54)	0.029
Suicidal ideation (1)	1.27 (1.01–1.60)	1.32 (0.95–1.85)		
No stressful live events (0)	1.0 (ref)	1.0 (ref)	–0.22 (–0.47 to 0.03)	–0.043
Stressful live events (1)	0.95 (0.81–1.10)	0.98 (0.77–1.24)		
No economic difficulties (0)	1.0 (ref)	1.0 (ref)	0.34 (0.08–0.59)	0.063
Economic difficulties (1)	1.24 (1.05–1.45)	0.82 (0.65–1.04)		
Health state (EQ-5D) 0 = bad; 100 =best	0.97 (0.97–0.98)	0.99 (0.98–0.99)	–0.02 (–0.03 to –0.12)	–0.145

Abbreviations: CI, confidence interval; OR, odds ratio.

<sup>1</sup>Odds ratios are adjusted for age and sex.

# Impact on sexual health



Effects on itch on answers to question 9 of the DLQI:

- Itch: yes = 31,2%

- No itch: yes = 12,8%

Fig. 1. Prevalence of positive answers to question 9 of the Dermatology Life Quality Index (DLQI) ("Over the last week, how much has your skin caused any sexual difficulties?") in different skin conditions. NMSC: non-melanoma skin cancer.

# Burden (EQ-5D)

Effects on itch on answers to question 9 of the DLQI:

- Itch: yes = 31,2%
- No itch: yes = 12,8%

Table 1 Distribution of the EQ visual analogue scale self-reported health status in common skin diseases

Diagnosis	Mean $\pm$ SD	n	Mean $\pm$ SD age (years)	Male (%)	Missing	Valid
Healthy controls	82.2 $\pm$ 15.5	1359	41.1 $\pm$ 13.6	33.4	34	1325
All patients	69.9 $\pm$ 19.7	4010	47.1 $\pm$ 18.0	43.7	297	3713
Leg ulcers	56.0 $\pm$ 20.2	125	60.8 $\pm$ 15.0	43.9	31	94
Prurigo	56.5 $\pm$ 15.9	28	57.4 $\pm$ 14.8	60.7	2	26
Hidradenitis suppurativa	56.9 $\pm$ 20.7	48	40.3 $\pm$ 12.2	20.8	3	45
Blistering diseases	59.0 $\pm$ 21.0	68	54.9 $\pm$ 14.7	42.6	13	55
Psychodermatological conditions	61.7 $\pm$ 19.4	36	47.1 $\pm$ 17.0	22.2	0	36
Pruritus	62.6 $\pm$ 18.4	61	54.3 $\pm$ 15.4	27.9	3	58
Scars, fibrosis of the skin, morphoea	63.6 $\pm$ 20.3	27	46.3 $\pm$ 15.0	32.1	2	25
Oral conditions <sup>a</sup>	63.9 $\pm$ 22.6	25	49 $\pm$ 14.5	57.7	0	25
Psoriasis	65.6 $\pm$ 20.0	682	47 $\pm$ 15.6	54.2	41	641
Atopic dermatitis	66.0 $\pm$ 19.0	177	35.2 $\pm$ 15.0	43.5	11	166
Vasculitis and immunological ulcers <sup>b</sup>	66.4 $\pm$ 17.2	70	50.4 $\pm$ 16.6	30.0	10	60
Connective tissue disease	66.5 $\pm$ 20.2	96	48.5 $\pm$ 14.9	20.0	11	88
Genital (notvenereal) <sup>c</sup>	67.4 $\pm$ 22.1	35	48.9 $\pm$ 16.7	71.4	4	31
Other hair disorders <sup>d</sup>	67.4 $\pm$ 21.4	83	41.0 $\pm$ 16.6	19.3	5	78
Lichen planus	68.3 $\pm$ 18.8	47	54.2 $\pm$ 15.0	31.9	3	44
Urticaria	68.4 $\pm$ 19.2	69	39.4 $\pm$ 14.7	40.6	3	66
Hand eczema	68.9 $\pm$ 20.7	158	45.2 $\pm$ 15.4	42.4	8	150
Eczema	69.0 $\pm$ 19.2	251	48.6 $\pm$ 18.2	39.2	13	238
Papulosquamous skin diseases <sup>e</sup>	69.5 $\pm$ 20.3	117	44.7 $\pm$ 18.4	40.5	7	110
Alopecia areata	69.7 $\pm$ 18.1	33	42.8 $\pm$ 14.1	33.3	2	31
Allergic, drug and phototoxic/photoallergic reactions	70.6 $\pm$ 21.6	27	46.4 $\pm$ 18.2	56.0	2	25
Malignant melanoma	72.4 $\pm$ 20.2	89	58.2 $\pm$ 13.8	46.1	3	86
Hyperhidrosis	72.7 $\pm$ 23.2	11	32.1 $\pm$ 12.9	25.0	1	10
Granuloma annulare	73.1 $\pm$ 13.0	13	51.3 $\pm$ 16.7	38.5	0	13
Nonmelanoma skin cancer and actinic keratosis	73.4 $\pm$ 19.0	426	65.3 $\pm$ 13.0	51.2	37	389
Infections of the skin	73.4 $\pm$ 18.0	266	40.4 $\pm$ 16.7	53.8	17	249
Nail diseases	73.4 $\pm$ 16.2	21	49.6 $\pm$ 15.8	33.3	2	19
Rosacea	74.6 $\pm$ 14.9	77	49.0 $\pm$ 14.5	34.2	2	75
Seborrhoeic dermatitis	75.5 $\pm$ 17.5	78	40.1 $\pm$ 15.8	43.6	3	75
Benign skin tumours	76.2 $\pm$ 16.2	163	49.2 $\pm$ 16.2	43.0	13	150
Acne	78.3 $\pm$ 16.5	236	24.7 $\pm$ 7.5	37.7	4	232
Hyper-/hypopigmentation, melasma	80.3 $\pm$ 15.4	32	40.8 $\pm$ 13.8	28.1	0	32
Naevi	80.5 $\pm$ 14.1	192	39.8 $\pm$ 15.2	35.9	10	182
Vitiligo	83.1 $\pm$ 10.3	25	36.3 $\pm$ 14.0	60.0	0	25
Other skin conditions <sup>f</sup>	67.9 $\pm$ 18.2	105	51.3 $\pm$ 17.0	45.2	22	83

<sup>a</sup>Stomatitis, glossitis, cheilitis, aphthae; <sup>b</sup>Including pyoderma gangrenosum, Behçet disease, panniculitis, necrobiosis lipoidica; <sup>c</sup>lichen sclerosus, pruritus/eczema vulvae, scroti et ani, balanoposthitis; <sup>d</sup>effluvium, androgenic alopecia, cicatricial alopecia, other hair/scalp conditions; <sup>e</sup>other than psoriasis: parapsoriasis, pityriasis rubra pilaris, pityriasis lichenoides, pityriasis rosea, Darrier disease; <sup>f</sup>skin examination after solid organ transplant or for other disease or diagnosis unclear.

Table 2 Linear regression EQ visual analogue scale adjusted for age, sex, socioeconomic status and comorbidity (diabetes mellitus, cardiological, respiratory, rheumatic or other disease)<sup>a</sup>

Diagnosis	$\beta$ (95% CI)	Standardized $\beta$	Uncorrected P-value	Valid (n)
All patients	-10.5 (-11.8 to -9.2)	-0.23	< 0.001	3418
Hidradenitis suppurativa	-24.2 (-28.9 to -19.5)	-0.28	< 0.001	42
Prurigo	-22.3 (-28.7 to -15.8)	-0.20	< 0.001	22
Blistering diseases	-21.2 (-25.6 to -16.7)	-0.26	< 0.001	48
Leg ulcers	-19.9 (-23.8 to -16.0)	-0.29	< 0.001	78
Psychodermatological conditions	-18.1 (-23.2 to -12.9)	-0.20	< 0.001	35
Oral (glossitis, stomatitis, cheilitis, aphthae)	-17.0 (-23.0 to -11.1)	-0.17	< 0.001	26
Other skin conditions <sup>b</sup>	-18.0 (-23.0 to -13.1)	-0.21	< 0.001	38
Hyperhidrosis	-16.8 (-27.2 to -6.3)	-0.09	0.002	8
Atopic dermatitis	-16.1 (-18.6 to -13.4)	-0.32	< 0.001	148
Scars, fibrosis of the skin, morphoea	-15.6 (-21.4 to -9.7)	-0.15	< 0.001	28
Other hair disorders <sup>c</sup>	-15.1 (-18.8 to -11.4)	-0.23	< 0.001	73
Psoriasis	-14.6 (-16.4 to -12.8)	-0.37	< 0.001	602
Pruritus	-14.3 (-18.6 to -10.1)	-0.19	< 0.001	56
Alopecia areata	-12.9 (-18.3 to -7.4)	-0.14	< 0.001	30
Urticaria	-12.6 (-16.6 to -8.5)	-0.18	< 0.001	58
Hand eczema	-11.0 (-13.8 to -8.2)	-0.21	< 0.001	140
Genital (notvenereal) <sup>d</sup>	-10.8 (-16.5 to -5.1)	-0.11	< 0.001	29
Connective tissue disease	-10.7 (-14.4 to -6.9)	-0.16	< 0.001	70
Eczema	-10.6 (-12.9 to -8.3)	-0.24	< 0.001	230
Vasculitis and immunological ulcers <sup>e</sup>	-10.6 (-14.8 to -6.4)	-0.15	< 0.001	55
Papulosquamous skin diseases <sup>f</sup>	-10.1 (-13.3 to -6.9)	-0.18	< 0.001	100
Allergic, drug, phototoxic/photoallergic reactions	-9.7 (-16.2 to -3.2)	-0.09	0.004	21
Lichen planus	-9.1 (-14.0 to -4.3)	-0.11	< 0.001	40
Infections of the skin	-8.7 (-10.9 to -6.5)	-0.21	< 0.001	239
Acne	-7.0 (-9.4 to -4.5)	-0.17	< 0.001	226
Malignant melanoma	-7.0 (-10.8 to -3.2)	-0.11	< 0.001	74
Nail diseases	-7.0 (-14.0 to -0.0)	-0.06	0.050	18
Granuloma annulare	-6.8 (-15.0 to 1.4)	-0.05	0.103	13
Seborrhoeic dermatitis	-6.4 (-10.0 to -2.9)	-0.10	< 0.001	74
Rosacea	-5.6 (-9.3 to -2.0)	-0.09	0.003	67
Benign tumours	-3.9 (-6.5 to -1.2)	-0.08	0.005	146
Nonmelanoma skin cancer and actinic keratosis	-3.1 (-5.8 to -0.6)	-0.08	0.014	359
Hyper-/hypopigmentations, melasma	-2.5 (-7.8 to 2.9)	-0.03	0.365	31
Naevi	-2.1 (-4.5 to 0.2)	-0.05	0.079	172
Vitiligo	-0.07 (-6.1 to 6.0)	-0.001	0.980	24

Bold denotes significance after Holm correction. CI, confidence interval. <sup>a</sup>Patients: 622 missing (3418 valid); controls: 331 missing (1028 valid). <sup>b</sup>Skin examination after organ transplant or for other disease; diagnosis unclear. <sup>c</sup>Effluvium; androgenic alopecia; cicatricial alopecia; other hair/scalp conditions. <sup>d</sup>Lichen sclerosus, pruritus/eczema vulvae, scroti et ani, balanoposthitis. <sup>e</sup>Including pyoderma gangrenosum, Behçet disease, panniculitis, necrobiosis lipoidica. <sup>f</sup>Other than psoriasis: parapsoriasis, pityriasis rubra pilaris, pityriasis lichenoides, pityriasis rosea, Darrier disease.



# Prevalence of stigmatization

**Table II. Perceived stigmatization scores of dermatological patients overall ( $n=5,487$ ), across specific skin diseases (in order of their overall sample size), and among skin-healthy controls ( $n=2,808$ )**

Diagnosis	PSQ Total scale			PSQ Absence of friendly behaviour			PSQ Confused/staring behaviour			PSQ Hostile behaviour		
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>
All patients	17.08	11.42	5,191	10.54	6.98	5,174	4.95	6.33	5,233	1.61	2.82	5,243
Psoriasis	20.54	12.45	1,363	12.01	7.37	1,355	6.93	7.26	1,366	1.66	2.95	1,373
Non-melanoma skin cancer	12.37	9.29	436	9.38	7.62	430	1.86	3.83	436	1.15	2.36	443
Atopic dermatitis	19.48	11.96	345	10.45	6.50	343	7.22	6.82	346	1.79	2.89	345
Eczema (other than AD)	16.11	11.16	243	10.28	7.17	239	4.35	6.00	244	1.35	2.47	247
Infections	14.91	9.55	232	10.50	6.75	233	3.16	5.08	237	1.35	2.30	236
Acne	16.94	11.44	233	10.30	6.59	231	4.46	5.62	236	2.14	3.40	234
Naevi	13.23	8.65	221	9.81	5.98	221	1.92	3.74	223	1.48	2.81	222
Benign tumours	14.47	9.57	209	10.32	6.63	212	2.54	4.00	212	1.61	2.58	211
Connective tissue disease	15.19	9.52	207	10.18	6.52	206	3.98	5.48	209	1.07	2.01	215
Urticaria	15.56	10.17	162	9.06	6.40	164	4.76	5.54	165	1.89	3.26	163
Bullous disease	19.14	12.25	136	10.32	7.54	133	7.18	7.13	137	1.60	3.04	138
Hidradenitis suppurativa	19.30	11.71	135	11.17	7.14	135	5.59	6.39	135	2.61	3.16	135
Prurigo	16.58	12.07	124	8.96	5.96	122	5.97	6.95	123	1.70	2.89	125
Scaly conditions	15.13	9.21	114	10.12	6.49	115	3.61	4.51	117	1.37	2.88	115
Allergies/hypersensitivity	14.33	11.15	114	9.32	8.20	114	3.85	5.03	116	1.11	2.64	114
Pruritus	15.83	9.46	106	10.56	6.26	105	3.57	4.94	109	1.51	2.18	107
Metabolic/systemic disease	14.43	9.01	101	9.30	5.74	100	3.39	4.53	101	1.71	3.14	101
Malignant melanoma	13.04	9.11	86	9.88	7.59	87	2.15	3.62	91	1.17	2.26	87
Rosacea	15.54	10.22	87	9.27	6.98	87	4.93	5.71	86	1.28	2.61	87
Alopecia areata	20.16	11.31	83	10.57	5.27	83	7.76	7.35	83	1.83	2.82	83
Venous insufficiency	18.44	10.50	69	10.73	6.71	69	6.05	6.49	71	1.83	2.87	69
Hand eczema	14.74	9.87	70	8.77	4.88	70	4.44	5.16	70	1.53	2.51	70
Other alopecias	18.42	12.46	64	10.98	6.66	63	5.89	7.81	64	1.74	2.68	64
Seborrhoeic dermatitis	15.80	11.21	53	9.67	6.29	56	4.27	6.06	55	1.83	2.95	58
Skin malformations	15.35	10.45	49	8.41	5.40	49	5.12	6.61	50	2.04	3.14	50
Vitiligo	20.61	14.21	48	12.10	7.38	49	6.35	8.26	47	1.94	3.36	48
Hyperhidrosis	17.65	13.39	26	8.35	5.29	26	5.42	6.99	26	3.89	3.81	26
Psychodermatological conditions	20.63	14.73	17	11.23	7.73	18	7.80	8.08	19	2.94	5.13	17
Others	14.21	10.10	58	10.49	6.78	59	2.37	4.15	59	1.45	2.73	60
Skin-healthy controls	14.14	8.40	2,711	9.88	5.41	2,714	2.66	3.99	2,715	1.61	2.44	2,729

AD: atopic dermatitis; SD: standard deviation; PSQ: Perceived Stigmatization Questionnaire.

**Table III. Levels of perceived stigmatization (Perceived Stigmatization Questionnaire (PSQ) total score) in patients with skin conditions compared with skin healthy-controls (Total  $n=6878$ ) in a multiple regression analysis including and excluding confounding variables**

Variables	Standardized regression coefficients ( $\beta$ )		
	Block 1	Block 2	Block 3
Dermatological diagnosis <sup>a</sup>			
Psoriasis	0.23***	0.15***	0.13***
Non-melanoma skin cancer	-0.05***	-0.04**	-0.02*
Atopic dermatitis	0.11***	0.04***	0.03*
Eczema (other than AD)	0.03*	-0.00	-0.00
Infections	0.02	-0.01	-0.01
Acne	0.03**	-0.00	-0.02*
Naevi	-0.01	-0.02*	-0.02
Benign tumours	0.01	-0.00	-0.00
Connective tissue disease	0.01	-0.02	-0.02
Urticaria	0.02	-0.00	-0.02
Bullous disorders	0.07***	0.05***	0.04***
Hidradenitis suppurativa	0.07***	0.03*	0.01
Prurigo	0.03*	0.01	0.00
Scaly conditions	0.01	-0.01	-0.02
Allergies/hypersensitivity	-0.00	-0.02	-0.04**
Pruritus	0.02*	-0.00	-0.00
Metabolic/systemic disease	0.01	-0.02	-0.02
Malignant melanoma	-0.01	-0.01	-0.01
Rosacea	-0.00	-0.01	-0.02
Alopecia areata	0.07***	0.05***	0.04**
Venous insufficiency	0.03*	0.01	0.01
Hand eczema	0.01	0.00	-0.00
Alopecias, other	0.04**	0.03*	0.02*
Seborrhoeic dermatitis	0.01	0.01	0.00
Skin malformations	-0.00	-0.01	-0.00
Vitiligo	0.04**	0.02*	0.02
Hyperhidrosis	0.02*	0.00	-0.01
Psychodermatological conditions	0.03*	0.01	0.01
Others	-0.00	-0.01	-0.01
Potential confounding variables			
Age		-0.12***	-0.07***
Sex <sup>b</sup>		-0.03*	-0.07***
Educational level: moderate <sup>c</sup>		0.03*	0.04**
Educational level: high <sup>c</sup>		-0.00	0.02
Marital status <sup>d</sup>		-0.05***	-0.05***
Current health state		-0.29***	-0.15***
Perceived stress			0.29***
Screened depression			0.06***
Screened anxiety			0.01
F-change	17.60***	116.26***	233.24***
R <sup>2</sup>	0.07	0.16	0.23

Block 1 includes dummy variables of individual patient diagnoses with skin-healthy controls as the reference group; statistically significant positive Beta values show that the patient group has significantly higher perceived stigmatization scores than skin-healthy controls and negative Beta values show that the patient group has significantly lower perceived stigmatization scores than skin-healthy controls. Block 2 takes the influence of potential sociodemographic and health-related variables into account, and Block 3 additionally includes psychological confounding variables.

<sup>a</sup>Reference group=skin-healthy controls; <sup>b</sup>reference group=male; <sup>c</sup>reference group=low education; <sup>d</sup>reference group=being single.

AD: atopic dermatitis; \*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

# Prevalence of body dysmorphic concerns

**Table 2** Prevalence of body dysmorphic disorder (BDD) in patients with common dermatological conditions and controls with healthy skin

Diagnosis	Screened BDD, n/N (%)	Crude OR (95% CI), cases vs. controls	Adjusted OR (95% CI)*
Controls	57/2754 (2.1)		
All patients	558/5290 (10.5)	5.58 (4.23–7.36)	5.84 (4.32–7.89)
Psoriasis	192/1383 (13.9)	7.63 (5.63–10.33)	7.65 (5.38–10.87)
Nonmelanoma skin cancer	15/444 (3.4)	1.65 (0.93–2.95)	4.92 (2.25–10.72)
Atopic dermatitis	55/345 (15.9)	8.97 (6.08–13.25)	8.08 (5.24–12.45)
Eczema	17/244 (7.0)	3.54 (2.03–6.19)	3.02 (1.55–5.89)
Infections	14/242 (5.8)	2.91 (1.59–5.29)	3.42 (1.81–6.50)
Acne	40/236 (16.9)	9.66 (6.29–14.84)	6.90 (4.21–11.29)
Nevi	12/226 (5.3)	2.65 (1.40–5.02)	3.09 (1.52–6.29)
Benign tumours	11/215 (5.1)	2.55 (1.32–4.94)	3.18 (1.57–6.45)
Connective tissue disorders	10/209 (4.8)	2.38 (1.20–4.73)	2.59 (1.23–5.48)
Urticaria	18/168 (10.7)	5.68 (3.26–9.89)	4.09 (2.16–7.76)
Bullous diseases	14/138 (10.1)	5.34 (2.90–9.85)	8.78 (4.20–18.37)
Hidradenitis suppurativa	31/135 (23.0)	14.1 (8.73–22.78)	7.39 (4.13–13.24)
Prurigo	12/126 (9.5)	4.98 (2.60–9.54)	6.51 (3.07–13.82)
Scaly conditions	5/117 (4.3)	2.11 (0.83–5.37)	2.39 (0.89–6.45)
Allergies/hypersensitivity	3/116 (2.6)	1.26 (0.39–4.07)	1.20 (0.36–4.03)
Pruritus	4/108 (3.7)	1.82 (0.65–5.11)	2.11 (0.60–7.38)
Metabolic/systemic diseases	16/101 (15.8)	8.91 (4.91–16.15)	7.98 (4.01–15.88)
Malignant melanoma	3/97 (3.1)	1.51 (0.46–4.91)	3.04 (0.87–10.57)
Rosacea	8/89 (9)	4.67 (2.16–10.12)	4.71 (1.98–11.23)
Alopecia areata	18/83 (21.7)	13.1 (7.31–23.5)	13.25 (6.89–25.49)
Venous insufficiency	6/73 (8.2)	4.24 (1.77–10.17)	5.26 (1.69–16.44)
Hand eczema	6/71 (8.5)	4.37 (1.82–10.49)	3.81 (1.42–10.24)
Other alopecias	13/65 (20)	11.83 (6.10–22.93)	12.94 (5.92–28.25)
Seborrheic dermatitis	3/56 (5.4)	2.68 (0.81–8.83)	2.71 (0.77–9.49)
Skin malformations	2/49 (4.1)	2.01 (0.48–8.49)	2.08 (0.46–9.49)
Vitiligo	10/48 (20.8)	12.45 (5.92–26.21)	11.26 (4.52–28.1)
Hyperhidrosis	12/26 (46.2)	40.56 (17.96–91.57)	27.73 (11.04–69.65)
Psychodermatological conditions	6/19 (31.6)	21.84 (8.02–59.5)	16.36 (4.12–64.98)
Others	2/61 (3.3)	1.60 (0.38–6.73)	1.25 (0.17–9.50)

CI, confidence interval; OR, odds ratio. \*Adjusted for sex, age, income, stress, comorbidities and body mass index.

**TABLE 2** Mean DCQ score in men and women according to skin conditions.

	Men			Women			<i>p</i> *	Effect size (Cohen's <i>d</i> )
	<i>n</i>	Mean	sd	<i>n</i>	Mean	sd		
Acne	73	6.5	4.8	160	8.1	5.3	0.037	0.32
Allergies/hypersensitive reactions	54	3.5	4.2	62	4.3	3.0	0.023	0.22
Alopecia areata	28	8.0	5.1	55	8.9	5.7	0.512	0.17
Alopecia (other)	23	6.1	4.8	42	9.0	5.1	0.028	0.59
Atopic dermatitis	159	6.6	4.9	185	8.9	5.4	<0.001	0.45
Benign tumours	86	4.1	4.0	128	5.8	4.4	0.003	0.40
Bullous disorders	66	5.2	5.5	72	4.8	5.2	0.709	0.07
Connective tissue disease	48	4.2	4.1	160	5.2	4.0	0.063	0.25
Dermatitis/eczema (other)	105	5.0	4.6	135	6.0	4.9	0.082	0.21
Hand eczema	25	5.8	4.7	46	4.8	4.6	0.309	0.21
Hidradenitis suppurativa	39	10.1	5.5	95	9.2	5.4	0.364	0.16
Hyperhidrosis	7	9.7	6.7	19	12.9	4.2	0.231	0.57
Infections	132	4.4	4.7	110	5.2	4.4	0.050	0.18
Malignant melanoma	46	3.3	3.6	51	5.1	4.3	0.029	0.45
Metabolic and systemic disease	28	4.5	4.6	73	7.3	6.1	0.033	0.52
Nevi	85	3.8	3.8	139	5.7	4.6	0.002	0.45
NMSC	219	2.9	3.5	222	4.2	4.0	<0.001	0.35
Prurigo	52	4.7	4.3	74	6.5	5.1	0.022	0.38
Pruritus	52	4.1	4.0	56	5.4	4.3	0.102	0.31
Psoriasis	684	6.5	5.0	684	7.8	5.1	<0.001	0.26
Rosacea	35	4.8	5.0	54	6.7	4.3	0.014	0.41
Scaly conditions	44	4.2	4.0	73	6.1	4.7	0.030	0.43
Seborrheic dermatitis	28	4.9	4.3	28	7.1	4.6	0.092	0.49
Skin malformations	13	5.1	3.6	36	4.8	4.7	0.509	0.07
Urticaria	54	4.0	3.4	113	6.3	5.2	0.016	0.52
Venous insufficiency	25	5.0	4.7	44	6.1	5.2	0.491	0.22
Vitiligo	18	4.8	5.1	29	8.5	5.2	0.012	0.72

\*From Mann–Whitney non-parametric test.

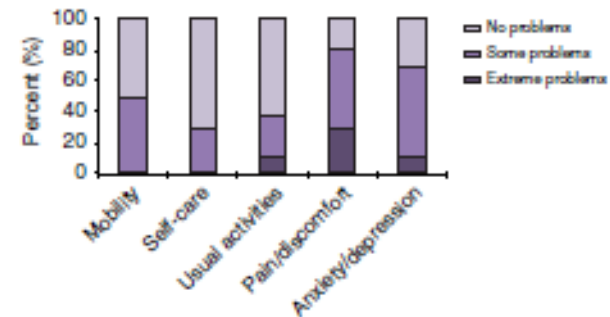
Schut C et al, Br J Dermatol 2022  
Sampogna F et al, JEADV 2025

# Psychological effects of CP (ESDaP I)

**Table 2** Anxiety, depression and suicidal ideation in patients with prurigo and controls

	Patients with prurigo <i>n</i> = 27	Controls <i>n</i> = 1359	<i>P</i> -value
<b>HADS anxiety</b>			
Range	0–17	0–18	
Mean ± SD	8.3 ± 4.8	4.7 ± 3.5	
≥ 11 (anxiety clinical case)	10 (37.1%)	150 (11.1%)	<0.001
<b>HADS depression</b>			
Range	1–16	0–16	
Mean ± SD	7.6 ± 4.1	4.3 ± 3.2	
≥ 11 (depression clinical case)	8 (29.6%)	58 (4.3%)	<0.001
<b>Suicidal ideation (MD=1)</b>			
Suicidal ideation	5 (19.2%)	88 (8.3%)	0.03
Suicidal ideation concerning the skin disease (among those with suicidal ideation)	4 (80.0%)	N.A	
Suicidal ideation concerning the skin disease (in the whole sample)	4 (15.4%)	N.A	

MD, missing data (patients/controls); N.A, not applicable.



**Figure 2** Results of the 5 dimensions of the EQ-5D-3L descriptive system for patients with prurigo.



# Psychological effects of CP (ESDaP II)

**Table III.** Psychological comorbidities in patients with CPG in comparison with controls, in multivariate analysis

	Mean difference or odds ratio [CI 95%]	P value
Pruritus related quality of life (5PLQ score)	9.769 [9.239; 10.299]	<b>&lt;.0001</b>
Health status (VAS EQ-5D-3L score)	−10.10 [−13.40; −6.50]	<b>&lt;.0001</b>
Depression and anxiety (PHQ-4)		
Patient Health Questionnaire-2 (PHQ-2)	1.206 [0.958; 1.454]	<b>&lt;.0001</b>
Generalized Anxiety Disorder (GAD-2)	0.895 [0.680; 1.165]	<b>&lt;.001</b>
Total score	2.124 [1.655; 2.593]	<b>&lt;.0001</b>
Perceived Stress (PSS-10 score)	2.81 [1.64; 3.99]	<b>&lt;.001</b>
Perceived Stigmatization (PSQ score)	0.122 [0.046; 0.198]	<b>&lt;.01</b>
Body dysmorphia (DCQ score)	7.30 [3.57; 14.9]	<b>&lt;.001</b>

Linear regressions were performed for 5-PLQ, VAS EQ-5D-3L, PHQ-4, PSS-10, and PSQ data. Logistic regression was performed for DCQ data (score < to 13 or ≥14). Mean difference was calculated for 5-PLQ, VAS EQ-5D-3L, PHQ-4, PSS-10, and PSQ data. Odds ratio was calculated for DCQ data. Values were presented with their 95% confidence interval.

Bold values:  $P < .05$ .

CPG, Chronic prurigo; N, number of data.

**Table IV.** Linear regression analyses for psychological variables in patients with CPG (standardized regression coefficients ( $\beta$ ))

	VAS EQ-5D-3L score (high values = good health)	PSQ score	PSS-10 score	PHQ-2 score	GAD-2 score	DCQ score	5PLQ score
Age	−.18	−.17	−.19	.01	−.09	−.22	.00
Sex (M/F)	.12	.06	−.05	.01	.08	.14	.04
Income (low/ middle/high)	.00	−.05	−.26	−.30	−.20	−.08	−.05
Stress (no/yes)	−.28	.18	.35	.13	.16	.14	.16
Satisfaction with appearance	.31	−.34	−.09	−.09	−.10	−.44	−.40
Itch intensity	−.23	.05	.14	.16	.23	.06	.43
Comorbidities (no/yes)	−.11	.09	−.06	.01	.06	.06	−.14
Visible flares	−.12	−.01	.01	.14	.08	−.06	.07
Clinical disease severity	.03	.21		.04	−.11	.10	.16
F	7.94	4.93	5.64	3.57	3.18	6.17	18.20
Corrected R <sup>2</sup>	.36	.24	.27	.17	.15	.29	.63

F-value of the analysis of variance to check whether the regression model is significant overall and can therefore predict the independent variable.

5PLQ score, Pruritus related quality of life; CPG, chronic prurigo; DCQ score, Body dysmorphia; GAD-2 score, Generalized Anxiety Disorder; PHQ-2 score, Patient Health Questionnaire-2; PSQ score, Perceived Stigmatization; PSS-10 score, Perceived Stress; VAS EQ-5D-3L score, Health status.

# Effects of itch

**TABLE 2** Assessment of itch intensity and itch-related quality of life for each diagnose group in the study sample ( $N=3365$ ).

Diagnosis	Itch intensity (NAS 0–10)* (Md (IQR))	Frequency (5PLQ1) (Md (IQR))	Impact on daily life (5PLQ2) (Md (IQR))	Impact on social life (5PLQ3) (Md (IQR))	Impact on sleep (5PLQ4) (Md (IQR))	Enjoyment impairment (5PLQ5) (Md (IQR))
Psoriasis	5 3–7	2 1–3	1 0–3	1 0–2	1 0–2	1 0–3
Atopic dermatitis	6 4–8	3 2–3	2 1–3	2 1–3	2 1–3	2 1–3
Dermatitis_eczema	6 4–8	3 2–3	2 1–3	1 0–2	1 0–3	1 0–3
Connective tissue disorders	4 3–6	1 0–2	0 0–1	0 0–1	0 0–1	0 0–1
Urticaria	6 4–8	2 1–3	2 1–3	1 0–3	2 1–3	2 1–3
Bullous disorders	6 3.25–8	2 0.5–3	1 0–3	1 0–2	1 0–3	1 0–3
Hidradenitis suppurativa	5 3–7	2 2–3	2 0–3	1 0–3	1 0–3	1 0–3
Chronic prurigo	6 3–8	3 2–4	2 1–3	2 1–3	2 1–3	2 1–3
Scaly conditions	5 3–7	2 1–3	1 0–3	1 0–2	1 0–2	1 0–2
Allergies – hypersensitive reactions	5 3–7	2 1–3	2 1–2	1 0–2	2 0–2	1 0–2
Pruritus on non-lesional skin	7 5–8	3 2–4	3 1–3	1 0–3	2.5 1–3	2 1–3
Rosacea	4 2–6	2 0–3	1 0–2	1 0–2	1 0–2	1 0–2
Hand eczema	5 3–7.5	2 1–3	1 0–3	1 0–2	1 0–2	1 0–2.25
Seborrheic dermatitis	5 2.25–7	2 1–3	1 0–2	1 0–2	1 0–2	1 0–2
All patients with skin conditions associated with itch	5 3–7	2 1–3	2 0–3	1 0–2	1 0–3	1 0–3

Note: 5PLQ 1: How often have you experienced an itching, burning, stinging, tingling sensation or pain on your skin? (0–4); 5PLQ 2: To what extent has the itching negatively affected you in your everyday life (e.g. if you must wear specific clothing) in your leisure time and/or at work?; 5PLQ 3: To what extent does the itching make you feel impaired when dealing with other people (e.g. feeling embarrassed and insecure)?; 5PLQ 4: To what extent does the itching have a negative impact on your sleep?; 5PLQ 5: To what extent has the itching influenced your enjoyment of life and your mood?

Abbreviations: Md, median; IQR, interquartile-range;  $n$ , affected persons;  $N$ , investigated patients.

**TABLE 3** Correlation between itch intensity and perceived stress, perceived stigmatization, prevalence of depression and anxiety, overall health status and itch-related quality of life (5PLQ) across skin conditions in the sample  $N=3365$ .

Itch intensity (NAS 0–10)	Perceived stress	Perceived Stigmatization	Anxiety	Depression	Overall health status	Frequency (5PLQ1)	Impact on daily life (5PLQ2)	Impact on social life (5PLQ3)	Impact on sleep (5PLQ4)	Enjoyment impairment (5PLQ5)
Psoriasis	0.279**	0.183**	0.286**	0.279**	–0.271**	0.618**	0.562**	0.483**	0.548**	0.533**
Atopic dermatitis	0.229**	0.176**	0.330**	0.274**	–0.394**	0.472**	0.451.451**	0.358**	0.437**	0.465**
Other dermatitis_eczema	0.163*	0.137	0.307**	0.357**	–0.379**	0.657**	0.545**	0.446**	0.640**	0.594**
Connective tissue disorders	0.115	0.040	0.127	0.094	–0.132	0.468*	0.461*	0.333*	0.509**	0.338**
Urticaria	0.041	0.300**	0.296**	0.087	–0.332**	0.493**	0.645**	0.422**	0.539**	0.532**
Bullous disorders	0.125	0.153	0.339**	0.249*	–0.341**	0.492**	0.611**	0.519**	0.628**	0.586**
Hidradenitis suppurativa	0.175	0.139	0.047	0.284**	–0.256**	0.468**	0.576**	0.436**	0.517**	0.429**
Chronic prurigo	0.128	0.199*	0.204*	0.110	–0.421**	0.546**	0.492**	0.418**	0.525**	0.528**
Scaly conditions	0.141	0.271*	0.047	0.368**	–0.180	0.688**	0.603**	0.596**	0.609**	0.557**
Allergies_hypersensitive reactions	0.081	0.215	0.187	–0.022	–0.270*	0.363**	0.302**	0.202	0.477**	0.400**
Pruritus on non-lesional skin	0.120	0.090	0.185	0.225*	–0.391**	0.459**	0.313**	0.402**	0.419**	0.432**
Rosacea	0.314*	0.073	0.192	0.285	–0.358*	0.490**	0.457**	0.385**	0.598**	0.376*
Hand eczema	–0.111	–0.075	0.010	0.214	–0.061	0.300*	0.444**	0.427**	0.401**	0.377**
Seborrheic dermatitis	0.288	0.317*	0.356*	0.400**	–0.299*	0.642**	0.593**	0.418**	0.506**	0.540**
All patients with skin conditions associated with itch	0.193**	0.152**	0.246**	0.246**	–0.299**	0.575**	0.537**	0.439**	0.553**	0.521**

\*\* illustrates highly significant correlations ( $p < 0.001$ ), \* illustrates significant correlations ( $p < 0.05$ ).

Zeidler C et al, JEADV 2024

# Itch Sensitization

## Neuronal Hyperexcitability

- Inflammation (NGF, PGE2, Substance P, Th2 Cytokines, etc.)
- Abnormal innervation
- PAR-2 activation, TRPs, mrgprs activation

- Functional and structural changes caused by prolonged itch (e.g., PF, ACC)

Brain

Skin

- Attenuation of descending inhibitory pathway

Spinothalamic/  
Spinopara-  
Brachial Tract

Descending  
Inhibitory  
Pathway

Spinal  
Cord

- Upregulation of itch-related receptors and molecules (Substance P, BDNF, opioids, etc.)

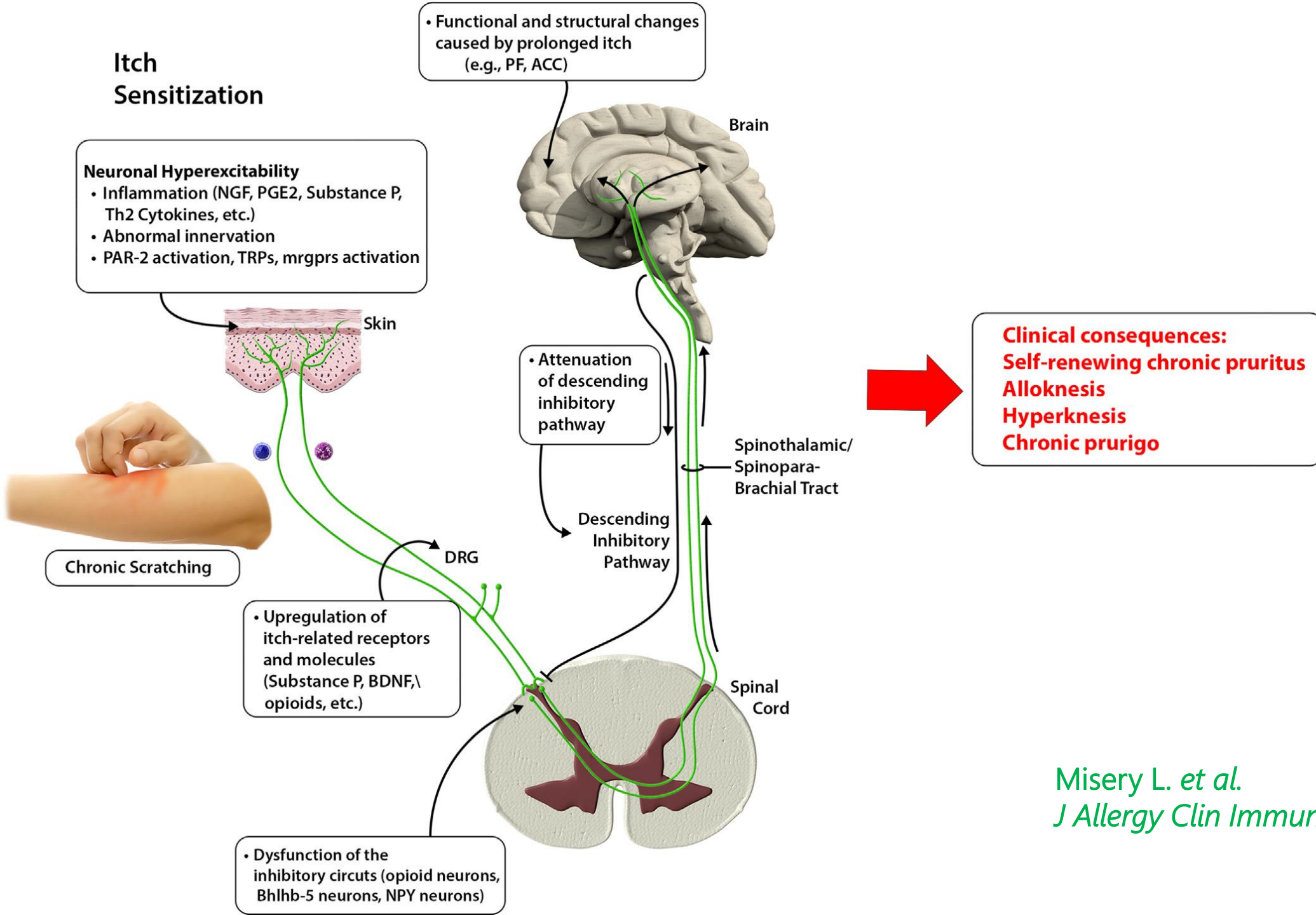
- Dysfunction of the inhibitory circuits (opioid neurons, Bhlhb-5 neurons, NPY neurons)

DRG

Chronic Scratching

**Clinical consequences:**  
Self-renewing chronic pruritus  
Alloknesis  
Hyperknesis  
Chronic prurigo

Misery L. *et al.*  
*J Allergy Clin Immunol* 2023;152:11-23



# Alloknesis and hyperknesis

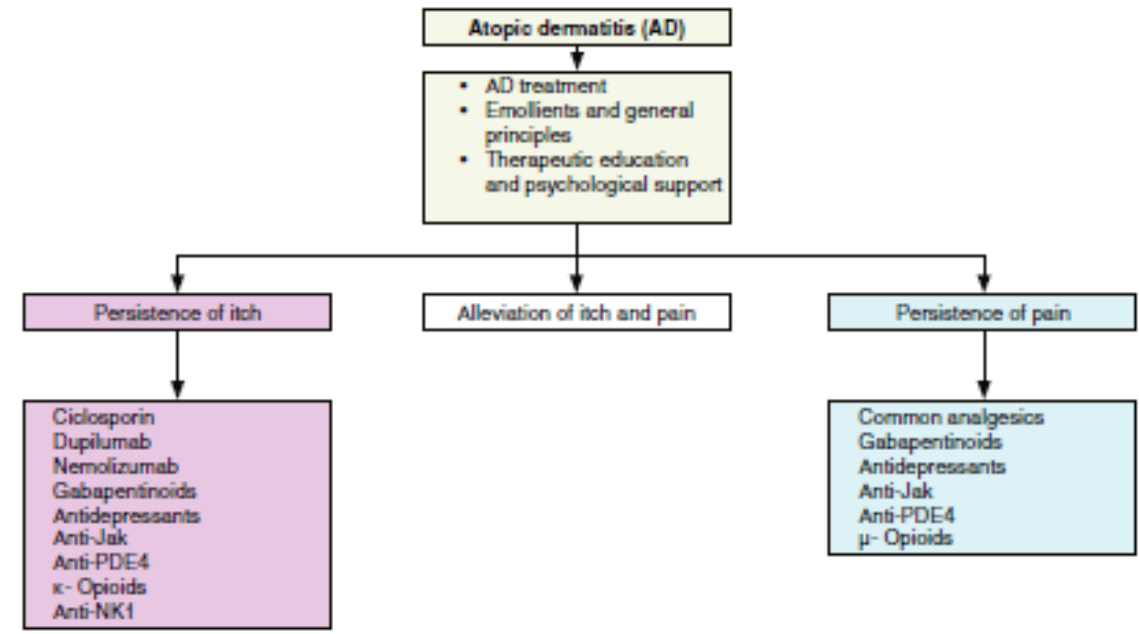
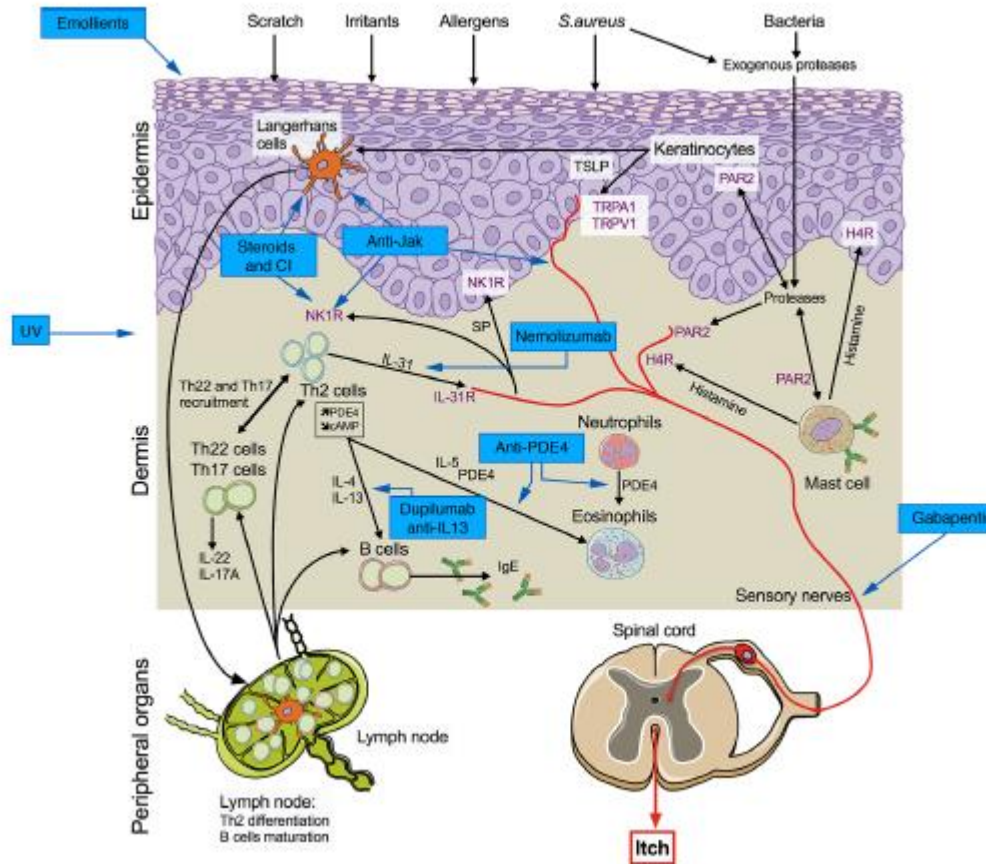
- Vicious cycle itch-scratch, alloknesis and hyperknesis = symptoms that are directly linked to itch sensitization
- Alloknesis (from the Greek, *allos*=other, *knesis*=itch) refers to itch evoked by normally non itch-evoking stimuli whereas mechanical itch refers to itch triggered by normally itchy light tactile stimuli, such as the pressure exerted by insects, stroking or vibration.
- Hyperknesis (from the Greek, *hyper*= over, beyond, overmuch, above measure) is an increased itch perceived in response to normally itch-evoking stimuli.

Andersen. Pain 2018;159:1185–9

Talagas. Br J Dermatol; in press

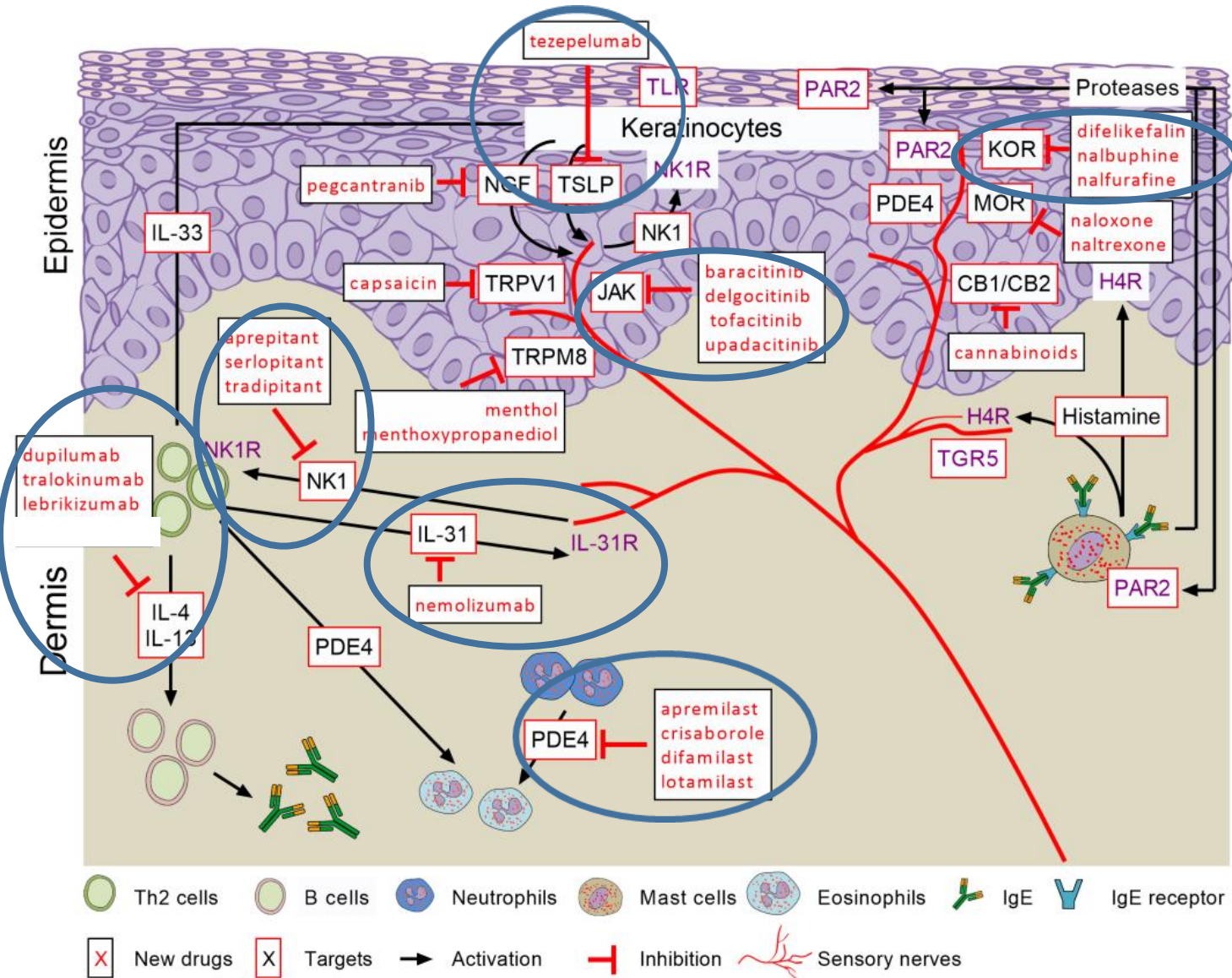
# A position paper on the management of itch and pain in atopic dermatitis from the International Society of Atopic Dermatitis (ISAD)/Oriented Patient-Education Network in Dermatology (OPENED) task force

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# Therapeutic perspectives



Misery L. *et al.*  
*Br J Pharmacol.* 2021;178:4775-4791

# Take home messages

- Itch (and sometimes skin pain) are predominant symptoms for patients
- Pathophysiology is better and better understood
- We have to treat them with effective treatments



30 janvier 2026

LYON

Journée Nationale de Formation sur le  
Prurit





# MANCHESTER

2026



BRITISH ASSOCIATION  
OF DERMATOLOGISTS  
HEALTHY SKIN FOR ALL



SUBMIT YOUR ABSTRACTS!

ESDaP SYMPOSIUM 30th June - 1<sup>st</sup> July 2026