

Supplementary Table S1. Population characteristics (extended version).

Variable	Category	Total (n = 4474)	Current chronic pruritus (n = 385)	No current chronic pruritus (n = 4089)
Lifestyle and demographic variables				
Sex, n (%)	Male	1843 (41.2%)	135 (35.1%)	1708 (41.8%)
	Female	2631 (58.8%)	250 (64.9%)	2381 (58.2%)
	Missing	0 (0%)	0 (0%)	0 (0%)
Age, median (IQR)		72 (63 – 79)	72 (65 – 80)	71 (62 – 78)
BMI†, median (IQR)		27 (24 – 30)	27 (24 – 31)	27 (24 – 30)
Skin colour††, n (%)	Pale-to-white	3152 (70.5%)	270 (70.1%)	2882 (70.5%)
	White-to-olive	385 (8.6%)	27 (7.0%)	358 (8.8%)
	Dark	194 (4.3%)	16 (4.2%)	178 (4.4%)
	Missing	743 (16.6%)	72 (18.7%)	671 (16.4%)
Education level†††, n (%)	Low	357 (8.0%)	32 (8.3%)	325 (7.9%)
	Medium	2503 (55.9%)	216 (56.1%)	2287 (55.9%)
	High	1592 (35.6%)	136 (35.3%)	1456 (35.6%)
	Missing	22 (0.5%)	1 (0.3%)	21 (0.5%)
Smoking#, n (%)	Never	1565 (35.0%)	121 (31.4%)	1444 (35.3%)
	Former	2143 (47.9%)	187 (48.6%)	1956 (47.8%)
	Current	373 (8.3%)	41 (10.6%)	332 (8.1%)
	Missing	393 (8.8%)	36 (9.4%)	357 (8.7%)
Alcohol consumption##	Non-drinker	805 (18.0%)	77 (20.0%)	728 (17.8%)
	Light drinking	816 (18.2%)	71 (18.4%)	745 (18.2%)
	Moderate drinking	1416 (31.6%)	117 (30.4%)	1299 (31.8%)
	Heavy drinking	1044 (23.3%)	84 (21.8%)	960 (23.5%)
	Missing	393 (8.8%)	36 (9.4%)	357 (8.7%)
Pruritus-specific factors				
Peak (worst) pruritus NRS past 24 hours###		6 (4 – 7)	6 (4 – 7)	NA
ItchyQoL§, median (IQR)	Symptom Subscore	15 (12 – 18)	15 (12 – 18)	NA
	Function Subscore	14 (10 – 19)	14 (10 – 19)	
	Emotion Subscore	18 (14 – 23)	18 (14 – 23)	
	Total Score	47 (38 – 59)	47 (38 – 59)	
	Missing/not asked, n (%)		4092 (91.5%)	3 (0.8%)
Dermatological conditions				
Atopic dermatitis, n (%)	Self-reported§§	456 (10.2%)	82 (21.3%)	374 (9.1%)
	Missing	472 (10.5%)	48 (12.5%)	424 (10.4%)
	Presence§§§	136 (3.0%)	25 (6.5%)	111 (2.7%)
	Missing	761 (17.0%)	69 (17.9%)	692 (16.9%)
Psoriasis, n (%)	Self-reported§§	191 (4.3%)	40 (10.4%)	151 (3.7%)
	Missing	402 (9.0%)	38 (9.9%)	364 (8.9%)
	Presence§§§	90 (2.0%)	24 (6.2%)	66 (1.6%)
	Missing	769 (17.2%)	73 (19.0%)	696 (17.0%)
Dry skin, n (%)	Self-reported§§	1920 (42.9%)	228 (59.2%)	1692 (41.4%)
	Missing	421 (9.4%)	39 (10.1%)	382 (9.3%)
	Presence of generalized dry skin§§§	833 (18.6%)	82 (21.3%)	751 (18.4%)
	Localized dry skin	1628 (36.4%)	143 (37.1%)	1485 (36.3%)
	No dry skin	1263 (28.2%)	91 (23.6%)	1172 (28.7%)
	Missing	750 (16.8%)	69 (17.9%)	681 (16.7%)
Systemic conditions				
Asthma¶, n (%)		521 (11.6%)	62 (16.1%)	459 (11.2%)
	Missing	104 (2.3%)	7 (1.8%)	97 (2.4%)
Diabetes mellitus¶¶, n (%)		776 (17.3%)	77 (20.0%)	699 (17.1%)
	Missing	45 (1.0%)	1 (0.3%)	44 (1.1%)

Renal function (eGFR) ^{¶¶¶} , median (IQR)		70 (60 – 81)	69 (60 – 79)	70 (60 – 81)
	Missing, n (%)	688 (15.4%)	67 (17.4%)	621 (15.2%)
Liver disease [⊗]	Liver stiffness, median (IQR)	5 (4 – 6)	5 (5 – 6)	5 (4 – 6)
	Steatotic liver disease, n (%)	1050 (23.5%)	103 (26.8%)	947 (23.2%)
	Missing, n (%)	1206 (27.0%)	114 (29.6%)	1092 (26.7%)
Thyroid disease ^{⊗⊗} , n (%)	Hyperthyroidism	46 (1.0%)	6 (1.6%)	40 (1.0%)
	Missing	582 (13.0%)	64 (16.6%)	518 (12.7%)
	Hypothyroidism	124 (2.8%)	18 (4.7%)	106 (2.6%)
	Missing	504 (11.3%)	64 (16.6%)	452 (11.1%)
Neurological conditions				
Stroke ^{⊗⊗⊗} , n (%)		150 (3.4%)	10 (2.6%)	140 (3.4%)
	Missing	48 (1.1%)	1 (0.3%)	47 (1.1%)
Polyneuropathy [†] , n (%)	Definite	80 (1.8%)	11 (2.9%)	69 (1.7%)
	Possible-to-probable	615 (13.7%)	66 (17.1%)	549 (13.4%)
	No	1711 (38.2%)	121 (31.4%)	1590 (38.9%)
	Missing	2068 (46.2%)	187 (48.6%)	1881 (46.0%)
Medication				
Cardiovascular medication [‡] , n (%)		1750 (39.1%)	167 (43.4%)	1583 (38.7%)
	Missing	392 (8.8%)	37 (9.6%)	355 (8.7%)
Central nervous system medication ^{‡‡} , n (%)		1450 (32.4%)	147 (38.2%)	1303 (31.9%)
	Missing	392 (8.8%)	37 (9.6%)	355 (8.7%)
Psychological symptoms				
Depressive symptoms [‡]	CES-D, median (IQR)	4 (1 – 8)	5 (2 – 12)	4 (1 – 8)
	Clinically relevant depressive symptoms (CES-D ≥ 16), n (%)	397 (8.9%)	51 (13.2%)	346 (8.5%)
	Missing, n (%)	420 (9.4%)	39 (10.1%)	381 (9.3%)
Anxiety symptoms ^{‡‡}	HADS-A-6, median (IQR)	2 (0 – 4)	2 (1 – 4)	2 (0 – 4)
	Missing, n (%)	433 (9.7%)	40 (10.4%)	393 (9.6%)
Sleep Quality ^{‡‡‡}	PSQI, median (IQR)	3 (1 – 6)	4 (2 – 7)	3 (1 – 6)
	Poor sleep (PSQI > 5), n (%)	1084 (24.2%)	112 (29.1%)	972 (23.8%)
	Missing, n (%)	473 (10.6%)	42 (10.9%)	431 (10.5%)

Abbreviations: BMI: Body Mass Index; CES-D: Centre for Epidemiologic Studies Depression scale; eGFR: estimated glomerular filtration rate; HADS-A-6: Hospital Anxiety and Depression Scale -Subscale Anxiety (6-item version); IQR: Interquartile Range; NA: Not Applicable.; NRS: Numeric Rating Scale; n: number of participants; PSQI, Pittsburgh Sleep Quality Index.

†BMI calculated as weight (kg)/height (m²).

††Skin colour determined by physician during full-body skin examination.

†††Education level categories: low = primary education; medium = lower vocational education, lower secondary education, or intermediate vocational education; high = general secondary education, higher vocational education, or university.

#Self-reported never, former, or current smoker of cigarettes.

##Alcohol consumption categories: non-drinker = never consumes alcohol; light drinking = ≤1 occasion/month (any quantity); moderate drinking = multiple occasions/month with ≤9 drinks/occasion; heavy drinking = multiple occasions/week with ≥10 drinks regularly.

###NRS for itch severity: peak itch in the past 24 hours based on questions from questionnaire.

§ItchyQoL completed only by participants with current chronic itch.

§§Self-reported possible atopic dermatitis defined by positive responses to UK Working Party Criteria: “Did you ever have an itchy skin condition? Did this itchy skin condition affect the skin creases?”, self-reported psoriasis: “Have you ever been diagnosed with psoriasis by a doctor?” and self-reported dry skin in the past year “Have you experienced dry skin in the past year?”.

§§§Physician-observed atopic dermatitis, psoriasis or dry skin (including both localized dryness on extensor sides of extremities and generalized dryness) during a full-body skin examination.

¶Self-reported lifetime asthma based on question from questionnaire: “Have you ever had asthma to date?”

¶¶Diabetes mellitus diagnosis: defined by fasting plasma glucose level > 6.9 mmol/L, non-fasting glucose level > 11.0 mmol/L, or use of antidiabetic medication.

¶¶¶ Estimated glomerular filtration rate (eGFR) used to assess renal function.

⊗Liver stiffness evaluated by a hepatology-trained physician using FibroScan, steatotic liver disease included both MASLD (metabolic dysfunction-associated steatotic liver diseases) and MetALD (individuals with MASLD who consume more than 140 gram/week of alcohol for women and 210 gram/week for men).

⊗⊗ Self-reported thyroid disease: whether they had ever been diagnosed with hyperthyroidism or hypothyroidism by a doctor.

⊗⊗⊗ Previous stroke events: based on medical records.

^lPolyneuropathy classification based on self-reported history, neurological examination and electromyography.

^{ll}Cardiovascular medications: anti-hypertensives, diuretics, vasoprotectives, beta-blockers, calcium-blockers and ACE-inhibitors.

^{lll}Central nervous system medication: anesthetics, analgesics, anti-epileptics, psycholeptics, psychoanaleptics and other agents that influence the central nervous system.

‡ Depressive symptoms were assessed using CES-D; scores ≥ 16 were considered clinically relevant.

‡‡ Anxiety symptoms were assessed using 6 items from the HADS-A subscale; no cut-off for clinically relevant anxiety symptoms were defined.

‡‡‡ Sleep quality measured by Pittsburgh Sleep Quality Index (PSQI); scores > 5 were considered poor sleep.

Supplementary Table S2. Prevalence rates of lifetime, 12-month and current chronic pruritus.

Variable	Category	Total (n = 4474)	95% CI
Lifetime chronic pruritus†	Yes	832 (18.6%)	17.5%-19.8%
	No	3642 (81.4%)	
	Missing	0 (0%)	
12-month chronic pruritus†	Yes	470 (10.5%)	9.6%-11.4%
	No	4004 (89.5%)	
	Missing	0 (0%)	
Current chronic pruritus†	Yes	385 (8.6%)	7.8%-9.5%
	No	4089 (91.4%)	
	Missing	0 (0%)	

Abbreviations: 95% CI; 95% Confidence Interval.

†Chronic pruritus assessed by asking whether participants had itch lasting more than 6 weeks ever, in the past 12 months, or currently in sent out questionnaire.

Supplementary Table S3. Logistic regression analyses of current chronic pruritus – lifestyle and demographic variables unified in one model.

Variable	OR ^a	95% CI	P-value ^b	
Lifestyle and Demographic Model, all demographic and lifestyle variables unified in one model				
Sex	Female	1.33	1.06 – 1.66	0.01
Age		1.01	1.00 – 1.02	0.01
Smoking status	Never smoker	Ref		
	Former smoker	1.14	0.89 – 1.46	0.29
	Current smoker	1.64	1.12 – 2.40	0.01
BMI		1.02	1.00 – 1.05	0.06
Education level	Low education	Ref		
	Medium education	1.06	0.72 – 1.58	0.76
	High education	1.20	0.79 – 1.83	0.39
Alcohol consumption	Non-drinker	Ref		
	Light drinking	0.89	0.63 – 1.25	0.49
	Moderate drinking	0.89	0.66 – 1.22	0.48
	Heavy drinking	0.83	0.59 – 1.17	0.29
Skin colour	Pale-to-white	Ref		
	White-to-olive	0.84	0.55 – 1.26	0.40
	Dark	1.04	0.61 – 1.76	0.89

Abbreviations: BMI, body mass index; CI, confidence interval; OR, odds ratio; Ref, reference variable. Values in bold represent statistical significance ($P < 0.05$).

^aThe OR measures the association between current chronic pruritus and not having pruritus, for each analysed variable. ^bP-values are not adjusted for multiple correction.

Supplementary Table S4. Logistic regression analyses of lifetime chronic pruritus.

Variable		OR ^a	95% CI	P-value ^b
Lifestyle and Demographic Model, all demographic and lifestyle variables unified in one model				
Sex	Female	1.44	1.23 - 1.70	<.001
Age		0.99	0.98 - 1.00	0.02
Smoking status	Never smoker	Ref		
	Former smoker	1.25	1.05 - 1.50	0.01
	Current smoker	1.58	1.20 - 2.09	0.001
BMI		1.00	0.99 - 1.02	0.81
Education level	Low education	Ref		
	Medium education	0.87	0.66 - 1.15	0.32
	High education	0.89	0.66 - 1.20	0.45
Alcohol consumption	Non-drinker	Ref		
	Light drinking	0.92	0.72 - 1.17	0.49
	Moderate drinking	0.85	0.68 - 1.06	0.15
	Heavy drinking	0.83	0.65 - 1.06	0.13
Skin colour	Pale-to-white	Ref		
	White-to-olive	0.81	0.61 - 1.08	0.15
	Dark	1.19	0.84 - 1.68	0.34
Dermatological conditions added individually to sex, age, and smoking status				
Self-reported atopic dermatitis		3.35	2.72 - 4.13	<.001
Observed atopic dermatitis		2.42	1.64 - 3.57	<.001
Self-reported psoriasis		2.75	2.03 - 3.72	<.001
Observed psoriasis		3.13	2.07 - 4.74	<.001
Self-reported dry skin		2.09	1.77 - 2.47	<.001
Observed dry skin		1.15	0.96 - 1.37	0.16
Non-dermatological factors added individually to sex, age, and smoking status				
Asthma		1.69	1.37 - 2.09	<.001
Diabetes mellitus		1.29	1.06 - 1.57	0.02
Renal function (eGFR)		1.00	0.99 - 1.00	0.57
Liver disease	Liver stiffness	1.05	1.00 - 1.10	0.11
	Steatotic liver disease	1.10	0.93 - 1.31	0.32
Thyroid disease	Hypothyroidism	1.17	0.78 - 1.76	0.47
	Hyperthyroidism	1.28	0.88 - 1.84	0.25
Stroke		0.83	0.53 - 1.32	0.47
Polyneuropathy	No	Ref		
	Possible-to-probable	1.37	1.10 - 1.70	0.009
	Definite	1.79	1.09 - 2.94	0.04
Depressive symptoms	CES-D continuously	1.02	1.01 - 1.04	<.001
	Clinically relevant depressive symptoms (CES-D \geq 16)	1.31	1.03 - 1.67	0.05
Anxiety symptoms	HADS-A-6 score	1.06	1.03 - 1.09	<.001
Sleep quality	PSQI continuously	1.04	1.02 - 1.07	0.001
	Poor sleep (PSQI > 5)	1.29	1.09 - 1.53	0.008
Central nervous system medications		1.20	1.02 - 1.41	0.05
Cardiovascular medications		1.09	0.92 - 1.29	0.38

Abbreviations: BMI, body mass index; CES-D, Centre for Epidemiologic Studies Depression Scale; eGFR, estimated glomerular filtration rate; CI, confidence interval; HADS-A-6, Hospital Anxiety and Depression Scale – Subscale Anxiety (6-item version); OR, odds ratio; PSQI, Pittsburgh Sleep Quality Index; Ref, reference variable.

^aThe OR measures the association between lifetime chronic pruritus and never having pruritus, for each analysed variable. ^bP-values for the lifestyle and demographic model are unadjusted; P-values for dermatological and non-dermatological factors are corrected for multiple comparisons using the false discovery rate (FDR). Values in bold represent statistical significance (P <0.05).

Supplementary Table S5. Logistic regression analyses of chronic pruritus in the past 12 months.

Variable		OR ^a	95% CI	P-value ^b
Lifestyle and Demographic Model, all demographic and lifestyle variables unified in one model				
Sex	Female	1.21	0.98 – 1.48	0.07
Age		1.01	1.00 – 1.01	0.34
Smoking status	Never smoker	Ref		
	Former smoker	1.12	0.90 – 1.40	0.32
	Current smoker	1.57	1.11 – 2.23	0.01
BMI		1.01	0.99 – 1.03	0.30
Education level	Low education	Ref		
	Medium education	0.96	0.67 – 1.36	0.80
	High education	1.03	0.70 – 1.50	0.90
Alcohol consumption	Non-drinker	Ref		
	Light drinking	0.95	0.70 – 1.30	0.76
	Moderate drinking	0.92	0.69 – 1.22	0.55
	Heavy drinking	0.80	0.58 – 1.09	0.16
Skin colour	Pale-to-white	Ref		
	White-to-olive	0.88	0.62 – 1.26	0.49
	Dark	1.05	0.65 – 1.69	0.84
Dermatological conditions added individually to sex, age, and smoking status^c				
Self-reported atopic dermatitis		2.87	2.23 – 3.68	<.001
Observed atopic dermatitis		2.38	1.55 – 3.66	<.001
Self-reported psoriasis		2.45	1.72 – 3.50	<.001
Observed psoriasis		3.54	2.26 – 5.57	<.001
Self-reported dry skin		2.25	1.81 – 2.79	<.001
Observed dry skin		1.19	0.95 – 1.50	0.19
Non-dermatological factors added individually to sex, age, and smoking status^c				
Asthma		1.47	1.12 – 1.92	0.02
Diabetes mellitus		1.13	0.88 – 1.45	0.40
Renal function (eGFR)		1.00	0.99 – 1.01	0.43
Liver disease	Liver stiffness	1.05	0.99 – 1.12	0.19
	Steatotic liver disease	1.25	1.01 – 1.56	0.07
Thyroid disease	Hypothyroidism	1.27	0.70 – 2.28	0.43
	Hyperthyroidism	1.35	0.84 – 2.17	0.27
Stroke		0.77	0.43 – 1.39	0.43
Polyneuropathy	No	Ref		
	Possible-to-probable	1.48	1.10 – 2.00	0.02
	Definite	2.00	1.10 – 3.65	0.05
Depressive symptoms	CES-D continuously	1.02	1.01 – 1.04	0.001
	Clinically relevant depressive symptoms (CES-D \geq 16)	1.50	1.12 – 2.01	0.02
Anxiety symptoms	HADS-A-6 score	1.05	1.01 – 1.08	0.03
Sleep quality	PSQI continuously	1.05	1.02 – 1.08	0.004
	Poor sleep (PSQI > 5)	1.26	1.01 – 1.57	0.07
Central nervous system medications		1.27	1.03 – 1.57	0.05
Cardiovascular medications		1.12	0.90 – 1.39	0.34

Abbreviations: BMI, body mass index; CES-D, Center for Epidemiologic Studies Depression Scale; eGFR, estimated glomerular filtration rate; CI, confidence interval; HADS-A-6, Hospital Anxiety and Depression Scale – Anxiety Subscale (6-item version); OR, odds ratio; Ref, reference variable.

^aThe OR measures the association between chronic pruritus in the past 12 months and not having pruritus, for each analysed variable. ^bP-values are unadjusted for the unified lifestyle and demographic model and corrected for multiple comparisons using the false discovery rate (FDR) in models assessing dermatological and non-dermatological covariates. Values in bold represent statistical significance (P < 0.05). ^cDermatological and non-dermatological covariates were each added individually to a model adjusted for sex, age, and smoking status (to align with models for current and lifetime CP, even though sex and age were not significant in the unified model).

Supplementary Table S6. ItchyQoI Linear Regression: Multivariable analyses.

Variable	Total score Beta (95% CI)	P	Symptoms score Beta (95% CI)	P	Functioning score Beta (95% CI)	P	Emotions score Beta (95% CI)	P
Sex: female	1.93 (-1.34 - 5.21)	0.68	-0.01 (-0.96 - 0.94)	0.98	1.33 (0.09 - 2.57)	0.18	0.79 (-0.77 - 2.35)	0.86
Age	-0.08 (-0.28 - 0.12)	0.69	-0.07 (-0.13 - -0.02)	0.19	0.00 (-0.07 - 0.08)	0.99	-0.01 (-0.11 - 0.08)	0.86
BMI:	0.04 (-0.34 - 0.42)	0.87	-0.01 (-0.12 - 0.10)	0.93	0.00 (-0.15 - 0.15)	0.99	0.03 (-0.15 - 0.22)	0.86
Skin colour: Pale-to-white	Ref						Ref	
White-to-olive	0.89 (-4.70 - 6.47)	0.86	-0.48 (-2.17 - 1.21)	0.93	1.18 (-0.98 - 3.33)	0.59	0.15 (-2.48 - 2.77)	0.95
Dark	2.99 (-4.30 - 10.28)	0.69	0.90 (-1.36 - 3.15)	0.93	3.32 (0.29 - 6.34)	0.18	1.62 (-1.81 - 5.05)	0.86
Education level: Low	Ref						Ref	
Medium	3.65 (-1.86 - 9.15)	0.65	1.19 (-0.39 - 2.77)	0.53	2.21 (0.11 - 4.32)	0.18	0.52 (-2.12 - 3.15)	0.86
High	5.21 (-0.61 - 11.03)	0.54	1.59 (-0.08 - 3.27)	0.33	3.23 (1.01 - 5.46)	0.06	0.73 (-2.05 - 3.51)	0.86
Smoking: Never	Ref						Ref	
Former	0.55 (-2.80 - 3.89)	0.86	-0.16 (-1.12 - 0.81)	0.93	0.63 (-0.66 - 1.91)	0.66	0.03 (-1.55 - 1.62)	0.97
Current	-1.23 (-6.37 - 3.91)	0.86	-0.43 (-1.89 - 1.04)	0.93	0.08 (-1.95 - 2.11)	0.99	-0.57 (-3.03 - 1.90)	0.86
Alcohol consumption: Never-to-light	Ref						Ref	
Moderate-to-heavy	-3.37 (-6.70 - -0.03)	0.43	-0.97 (-1.88 - -0.05)	0.53	-1.43 (-2.72 - -0.15)	0.18	-0.85 (-2.46 - 0.76)	0.86
Dermatological conditions								
Self-reported and/or observed atopic dermatitis	6.29 (2.76 - 9.81)	0.01	1.36 (0.35 - 2.38)	0.20	2.30 (0.94 - 3.67)	0.03	2.78 (1.10 - 4.46)	0.03
Self-reported and/or observed psoriasis	3.42 (-1.16 - 8.01)	0.63	0.40 (-0.94 - 1.75)	0.93	1.25 (-0.53 - 3.03)	0.43	1.75 (-0.47 - 3.97)	0.67
Self-reported and/or observed dry skin	-0.76 (-5.60 - 4.08)	0.86	-0.10 (-1.50 - 1.31)	0.93	0.05 (-1.80 - 1.90)	0.99	-0.58 (-2.95 - 1.80)	0.86
Non-dermatological factors								
Asthma	1.78 (-2.19 - 5.74)	0.69	0.89 (-0.26 - 2.04)	0.53	1.02 (-0.50 - 2.55)	0.43	-0.25 (-2.14 - 1.65)	0.86
Diabetes mellitus	2.98 (-1.21 - 7.17)	0.63	1.40 (0.20 - 2.60)	0.20	0.58 (-1.02 - 2.17)	0.76	1.00 (-1.00 - 2.99)	0.86
Renal function (eGFR)	0.06 (-0.07 - 0.19)	0.69	0.02 (-0.02 - 0.06)	0.84	0.02 (-0.04 - 0.07)	0.83	0.02 (-0.04 - 0.09)	0.86
Liver disease								
Liver stiffness	0.31 (-0.63 - 1.25)	0.74	0.02 (-0.26 - 0.30)	0.93	0.14 (-0.22 - 0.50)	0.76	0.17 (-0.28 - 0.62)	0.86
Steatotic liver disease	-0.46 (-4.42 - 3.50)	0.87	-0.29 (-1.41 - 0.82)	0.93	0.09 (-1.42 - 1.60)	0.99	-0.29 (-2.21 - 1.63)	0.86
Hypothyroidism	0.04 (-5.40 - 5.49)	0.99	-0.14 (-1.71 - 1.42)	0.93	-0.47 (-2.52 - 1.59)	0.89	0.55 (-2.11 - 3.20)	0.86
Stroke	4.51 (-4.41 - 13.43)	0.69	0.64 (-1.97 - 3.24)	0.93	2.53 (-0.90 - 5.96)	0.43	1.31 (-2.92 - 5.54)	0.86
Polyneuropathy								
Possible-to-definite	0.59 (-3.30 - 4.49)	0.86	0.13 (-1.00 - 1.26)	0.93	0.14 (-1.36 - 1.64)	0.99	0.30 (-1.55 - 2.14)	0.86
Central nervous system medications	-1.33 (-4.84 - 2.19)	0.69	0.56 (-0.35 - 1.48)	0.53	0.44 (-0.78 - 1.66)	0.43	0.41 (-1.17 - 1.98)	0.86
Cardiovascular medications	1.30 (-1.92 - 4.53)	0.69	0.14 (-0.86 - 1.15)	0.93	-0.12 (-1.45 - 1.22)	0.86	-1.23 (-2.90 - 0.44)	0.67
NRS (per unit increase)	0.19 (-0.04 - 0.41)	0.55	0.05 (-0.02 - 0.11)	0.93	0.06 (-0.03 - 0.15)	0.24	0.08 (-0.03 - 0.19)	0.67
Clinically relevant depressive symptoms (CES-D ≥ 16)	2.80 (-2.28 - 7.88)	0.68	0.59 (-0.77 - 1.96)	0.93	0.50 (-1.41 - 2.41)	0.43	1.65 (-0.86 - 4.15)	0.76
Anxiety symptoms (HADS-A-6)	0.80 (0.16 - 1.43)	0.19	0.07 (-0.11 - 0.25)	0.93	0.23 (-0.01 - 0.47)	0.99	0.46 (0.15 - 0.77)	0.05
Poor sleep (PSQI > 5)	1.98 (-1.60 - 5.55)	0.68	-0.16 (-1.15 - 0.84)	0.69	0.92 (-0.46 - 2.29)	0.76	1.31 (-0.39 - 3.01)	0.67

Abbreviations: BMI, body mass index; CES-D, Centre for Epidemiologic Studies Depression Scale; CI, confidence interval; eGFR, estimated glomerular filtration rate; HADS-A-6, Hospital Anxiety and Depression Scale – Anxiety subscale (6-item version); NRS, Numerical Rating Scale for itch intensity; PSQI, Pittsburgh Sleep Quality Index; Ref, reference category. *P-values were corrected for multiple comparisons using the false discovery rate (FDR) method per outcome domain. P-values in bold indicate significance at FDR-adjusted P < 0.05.

Supplementary Table S7. Rotated Component Matrix of Principal Component Analysis.

Original domains	ItchyQoL items	Component			
		1 “Social and emotional impact”	2 “Psychological frustration and emotional distress”	3 “Lifestyle and environmental burden”	4 “Physical symptoms and damage”
Symptoms	My itchy skin condition bleeds.	.217	.061	.126	.689
	My skin hurts because of my itchy skin condition.	.179	.243	.104	.722
	My itchy skin condition burns or stings.	.049	.202	.326	.601
	I get scars from my itchy skin condition.	.259	.015	.122	.726
	I need to scratch my itchy skin condition.	-.224	.643	-.061	.335
	Temperature/seasonal changes aggravate my itchy skin condition.	.033	.185	.586	.108
Functioning	I spend a lot of money treating my itchy skin condition.	.162	.138	.669	.313
	My itchy skin condition makes it hard to work or do what I enjoy.	.580	.405	.340	.154
	My itchy skin condition affects my interaction with others.	.709	.246	.236	.185
	My itchy skin condition affects how well I sleep.	.214	.507	.457	.107
	My itchy skin often makes it difficult to concentrate.	.388	.582	.388	-.006
	My itchy skin condition limits the types of clothes I can wear.	.352	.272	.507	.160
	My itchy skin condition forces me to buy special soaps, detergents, and lotions.	.141	.040	.753	.093
Emotions	I am frustrated by my itchy skin condition.	.410	.588	.225	.138
	I am embarrassed by my itchy skin condition.	.708	.178	.082	.255
	My itchy skin condition drives me crazy/nuts.	.212	.777	.186	.121
	My itchy skin condition makes me feel angry or irritable.	.416	.643	.218	.122
	My itchy skin condition makes me feel depressed or sad.	.600	.490	.178	.233
	I worry about what other people think about me because of my itchy skin condition.	.829	.026	.050	.211
	I worry that the itching will last forever.	.305	.520	.118	.025
	I feel self-conscious because of my itchy skin condition.	.536	.504	.191	.202
My personality has changed because of my itchy skin condition.	.783	.243	.161	.077	

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 9 iterations.

Supplementary Table S8. ItchyQol Linear Regression Analysis: Univariable analyses, using components derived from principal component analysis as outcome.

Variable	Component 1 “Social and emotional impact” Beta (95% CI)	P ^a	Component 2 “Psychological frustration and emotional distress” Beta (95% CI)	P ^a	Component 3 “Lifestyle and environmental burden” Beta (95% CI)	P ^a	Component 4 “Physical symptoms and damage” Beta (95% CI)	P ^a
Sex: female	0.02 (-0.21 – 0.24)	0.93	0.30 (0.08 – 0.52)	0.04	0.25 (0.03 – 0.47)	0.51	0.09 (-0.13 – 0.31)	0.85
Age	-0.01 (-0.02 – 0.01)	0.67	-0.00 (-0.01 – 0.01)	0.87	-0.01 (-0.02 – 0.00)	0.75	-0.01 (-0.02 – 0.00)	0.58
BMI	0.01 (-0.02 – 0.03)	0.71	0.00 (-0.02 – 0.03)	0.93	0.00 (-0.02 – 0.03)	0.86	0.01 (-0.02 – 0.03)	0.85
Skin colour: Pale-to-white	Ref		Ref					
White-to-olive	-0.03 (-0.04 – 0.39)	0.93	0.08 (-0.34 – 0.51)	0.91	0.15 (-0.28 – 0.58)	0.85	-0.09 (-0.52 – 0.34)	0.85
Dark	0.24 (-0.35 – 0.82)	0.68	0.22 (-0.39 – 0.84)	0.77	0.20 (-0.39 – 0.79)	0.85	0.34 (-0.27 – 0.95)	0.76
Education level: Low	Ref		Ref					
Medium	0.18 (-0.23 – 0.58)	0.68	-0.19 (-0.59 – 0.21)	0.71	0.27 (-0.13 – 0.67)	0.69	0.16 (-0.25 – 0.56)	0.85
High	0.13 (-0.28 – 0.55)	0.69	-0.20 (-0.62 – 0.21)	0.71	0.38 (-0.03 – 0.80)	0.51	0.23 (-0.19 – 0.65)	0.76
Smoking: Never	Ref		Ref					
Former	-0.11 (-0.36 – 0.13)	0.67	0.02 (-0.22 – 0.26)	0.93	0.05 (-0.19 – 0.29)	0.86	-0.18 (-0.42 – 0.06)	0.58
Current	-0.14 (-0.54 – 0.26)	0.69	0.31 (-0.08 – 0.69)	0.32	-0.16 (-0.55 – 0.23)	0.85	0.01 (-0.38 – 0.40)	0.97
Alcohol consumption: Never-to-light								
Moderate-to-heavy	-0.09 (-0.32 – 0.14)	0.68	-0.21 (-0.44 – 0.01)	0.19	-0.20 (-0.42 – 0.03)	0.51	-0.18 (-0.40 – 0.05)	0.58
Dermatological conditions								
Self-reported and/or observed atopic dermatitis	0.22 (-0.04 – 0.47)	0.32	0.28 (0.02 – 0.54)	0.13	0.27 (0.02 – 0.51)	0.51	0.30 (0.05 – 0.54)	0.53
Self-reported and/or observed psoriasis	0.68 (0.34 – 1.01)	0.002	-0.21 (-0.56 – 0.13)	0.51	-0.03 (-0.37 – 0.31)	0.92	0.31 (-0.03 – 0.66)	0.58
Self-reported and/or observed dry skin	-0.09 (-0.45 – 0.26)	0.71	0.12 (-0.22 – 0.47)	0.77	0.20 (-0.14 – 0.53)	0.75	0.07 (-0.28 – 0.41)	0.85
Non-dermatological factors								
Asthma	0.06 (-0.23 – 0.36)	0.74	0.11 (-0.18 – 0.40)	0.77	0.20 (-0.09 – 0.49)	0.69	0.23 (-0.06 – 0.52)	0.58
Diabetes mellitus	-0.13 (-0.40 – 0.14)	0.67	0.20 (-0.07 – 0.47)	0.36	-0.04 (-0.31 – 0.23)	0.86	0.20 (-0.07 – 0.47)	0.58
Renal function (eGFR)	0.01 (0.00 – 0.02)	0.15	-0.00 (-0.01 – 0.01)	0.93	0.00 (-0.01 – 0.01)	0.85	0.01 (-0.00 – 0.01)	0.58
Liver disease								
Liver stiffness	0.04 (-0.02 – 0.11)	0.56	-0.03 (-0.10 – 0.04)	0.77	-0.01 (-0.08 – 0.05)	0.86	-0.01 (-0.08 – 0.06)	0.88
Steatotic liver disease	0.001 (-0.24 – 0.25)	1.00	-0.02 (-0.27 – 0.24)	0.93	0.09 (-0.15 – 0.33)	0.85	-0.05 (-0.29 – 0.19)	0.85
Thyroid disease								
Hypothyroidism	0.26 (-0.12 – 0.64)	0.56	-0.04 (-0.64 – 0.38)	0.93	-0.06 (-0.45 – 0.33)	0.86	0.05 (-0.39 – 0.49)	0.88
Hyperthyroidism	0.22 (-0.19 – 0.63)	0.67	-0.05 (-0.47 – 0.38)	0.93	-0.00 (-0.43 – 0.42)	0.99	0.15 (-0.32 – 0.62)	0.85
Stroke	0.43 (-0.32 – 1.18)	0.65	-0.06 (-0.81 – 0.69)	0.93	0.62 (-0.13 – 1.37)	0.52	0.51 (-0.23 – 1.26)	0.59
Polyneuropathy								
Possible-to-definite	0.07 (-0.17 – 0.31)	0.70	0.06 (-0.19 – 0.31)	0.88	-0.00 (-0.25 – 0.24)	0.99	-0.06 (-0.32 – 0.20)	0.85
Central nervous system medications	0.08 (-0.16 – 0.31)	0.69	0.24 (0.01 – 0.47)	0.13	0.06 (-0.16 – 0.28)	0.86	0.10 (-0.13 – 0.33)	0.85
Cardiovascular medications	-0.25 (-0.47 – -0.03)	0.13	0.06 (-0.16 – 0.28)	0.87	0.08 (-0.14 – 0.30)	0.85	-0.06 (-0.28 – 0.17)	0.85
NRS: Intensity of pruritus	-0.01 (-0.02 – 0.01)	0.68	0.02 (0.01 – 0.04)	0.04	0.01 (-0.01 – 0.02)	0.79	0.01 (-0.01 – 0.02)	0.85
Depressive symptoms								
CES-D continuous	0.02 (0.01 – 0.04)	0.04	0.03 (0.01 – 0.04)	0.005	0.00 (-0.01 – 0.02)	0.86	0.00 (-0.01 – 0.02)	0.92
Clinically relevant (CES-D ≥ 16)	0.38 (0.05 – 0.71)	0.13	0.44 (0.12 – 0.76)	0.04	0.17 (-0.15 – 0.48)	0.79	0.08 (-0.24 – 0.40)	0.85
Anxiety symptoms (HADS-A-6)	0.07 (0.03 – 0.11)	0.007	0.07 (0.03 – 0.11)	0.005	0.04 (-0.00 – 0.07)	0.51	-0.01 (-0.04 – 0.03)	0.88
Sleep quality								
PSQI continuous	0.03 (-0.00 – 0.06)	0.31	0.04 (0.01 – 0.07)	0.07	0.01 (-0.03 – 0.04)	0.86	-0.01 (-0.04 – 0.02)	0.85
Poor sleep (PSQI > 5)	0.31 (0.07 – 0.54)	0.09	0.31 (0.07 – 0.54)	0.04	0.10 (-0.13 – 0.33)	0.85	-0.07 (-0.31 – 0.17)	0.85

Abbreviations: BMI, body mass index; CES-D, Centre for Epidemiologic Studies Depression Scale; CI, confidence interval; eGFR, estimated glomerular filtration rate; HADS-A-6, Hospital Anxiety and Depression Scale – Anxiety subscale (6-item version); NRS, Numerical Rating Scale for itch intensity; PSQI, Pittsburgh Sleep Quality Index; Ref, reference category. ^aP-values were corrected for multiple comparisons using the false discovery rate (FDR) method per outcome domain. P-values in bold indicate significance at FDR-adjusted P < 0.05.