Appendix S1: Questionnaire: Validation and Content

A. Content validation and feasibility assessment

Before conducting the survey in the schools, the questionnaire was tested for feasibility and validity by distributing to clinicians, researchers with extensive itch expertise, patients, their parents, and non-experts. All collaborators were asked for suggestions on improvements to the questionnaire. The questionnaire was adapted based on suggestions, and consensus on the final version was reached, as all collaborators either agreed or did not actively disagree. The validity of the final questionnaire was then explored.

The *content validity* of the questionnaire was assessed by conducting a semi-structured, one-to-one interview with patients and their parents at the Pediatric Consultation at the Department of Dermatology, Venereology, and Allergology of the University Hospital Kiel and non-experts. The interview started with a general discussion regarding the understanding of the itch questions and the prevalence of itch-associated conditions. The feasibility of the questionnaire was also assessed. In addition, the suitability of the content was evaluated by experts.

For assessing the *test-retest reliability*, the questionnaire was answered twice within a period of 3 months by 33 children, including 23 third and fourth graders from a primary school in Kiel and 10 patients from the Pediatric Consultation of the Department of Dermatology, Venereology, and Allergology of the University Hospital Kiel. The acute itch questions were not included in the second evaluation because of the time (mean 113 days) between the first and second tests.

To assess *psychometric measures,* the questionnaire was given to children visiting the Outpatient Department of Dermatology of the University Hospital of Kiel, Germany. Patients were included consecutively.

The questionnaire was validated by comparing itch reported via the questionnaire with the patient's medical history and examination by a physician, as described in the medical records of each patient. As no gold standard existed for assessing itch in children, the prevalence of chronic itch assessed via the questionnaire was compared with information from medical

records, and the mean agreement between the measures was determined. Even comorbidities were compared with medical record data to confirm the reliability of the comorbidity questions.

B. Content

Prevalence of itch in school children

Epidemiological study
in primary schools in Kiel

ID _____
Date _____

Questionnaire for measuring itch in childhood
Dermatological Clinic Kiel

Age of the child	_____ years	
Gender	□ male	□ female

Was your child born in Germany?
□ yes □ no, he/ she was born in _____

Were you (mother) born in Germany?
□ yes □ no, I was born in _____

Were you (father) born in Germany?
□ yes □ no, I was born in _____

Number of older brothers and sisters of your child:	_____	
Number of younger brothers and sisters of your child:	_____	
Is your child:		
First-born	□ yes	□ no
Second-born	□ yes	□ no
Third-born	□ yes	□ no
Fourth-born	□ yes	□ no
Twin	□ yes	□ no
At least triplet	□ yes	□ no

1 a. Does your child have one or more of the following diseases diagnosed by a doctor?

Yes **No**
□ □

If yes, please select the appropriate answer.

Disease	**Child**
Neurodermatitis	□
Bronchial asthma	□
Allergic rhinitis/ hay fever and conjunctivitis, food allergy	□
Dry skin	□
Hives (urticaria)	□
Head louse (Pediculosis capitis), within the last 6 weeks	□
Scabies, within the last 6 weeks	□
Other dermatological diseases as _____	□
Other diseases (e. g. liver or kidney disease) as _____ _____	□

1 b. Do you (parents) and your other children have one or more of the following diseases diagnosed by a doctor?

If yes, please select the appropriate answer.
Please mark the number of the affected children.

Disease	**Mother**	**Father**	**Siblings**
Neurodermatitis	□	□	□ □ □ □
Bronchial asthma	□	□	□ □ □ □
Allergic rhinitis /hay fever and conjunctivitis, food allergy	□	□	□ □ □ □
Dry skin	□	□	□ □ □ □
Hives (urticaria)	□	□	□ □ □ □
Head louse (Pediculosis capitis), within the last 6 weeks	□	□	□ □ □ □
Scabies, within the last 6 weeks	□	□	□ □ □ □
Other dermatological diseases as _____	□	□	□ □ □ □
Other diseases (e. g. liver or kidney disease) as _____ _____	□	□	□ □ □ □

2. Does/ did your child experience itch?

2a. Now or within the last 24 hours?	□ yes	□ no

If yes, please proceed with question 3.

2b. Within the last 7 days?	□ yes	□ no
2c. Within the last 6 weeks?	□ yes	□ no

3. Did your child ever experience chronic itch (≥ 3 days per week over a period of ≥ 6 weeks**)?**

□ no
□ yes, within the last 24 hours
□ yes, within the last 12 months
□ yes, but it is more than 12 months ago

If you answered 'no' to question number 2a and 3, you finished the questionnaire.
Thank you very much for your help!

If your answer to question 2a is 'yes' and to question 3 is 'no', please proceed with question 4 to 6 (current itch).

If your answer to question 2a is 'no' and to question 3 is 'yes'
please proceed with question 7 to 13 (chronic itch).

If your answer to question 2a and 3 is 'yes', please answer all of the following questions.

Questions about the current itch

4. Is the cause of your child's current itch known (diagnosed by a doctor)?

□ yes □ no

If yes, please select the appropriate answer.
Multiple responses possible.

Erkrankung	
Neurodermatitis	□
Dry skin	□
Hives (urticaria)	□
Head louse (Pediculosis capitis)	□
Scabies	□
Drugs	□
If yes, which?	
_____	
Other causes	□
If yes, which?	
_____	

5. How strong was your child's worst itch within the last 24 hours?

Please answer this question with your child and select the appropriate smiley to describe the itch intensity.

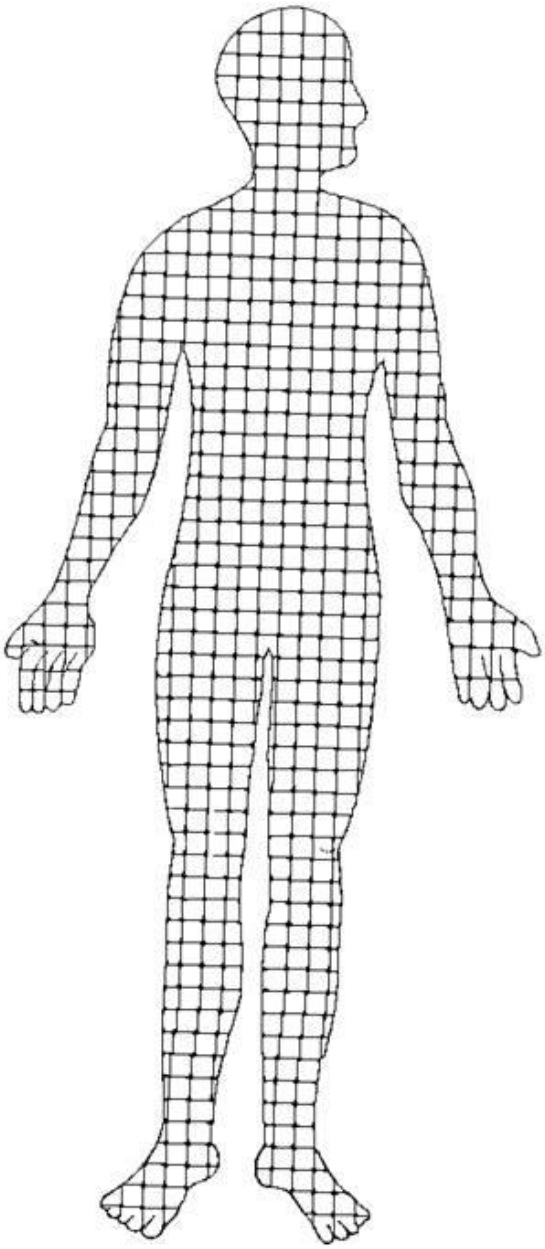
no itch

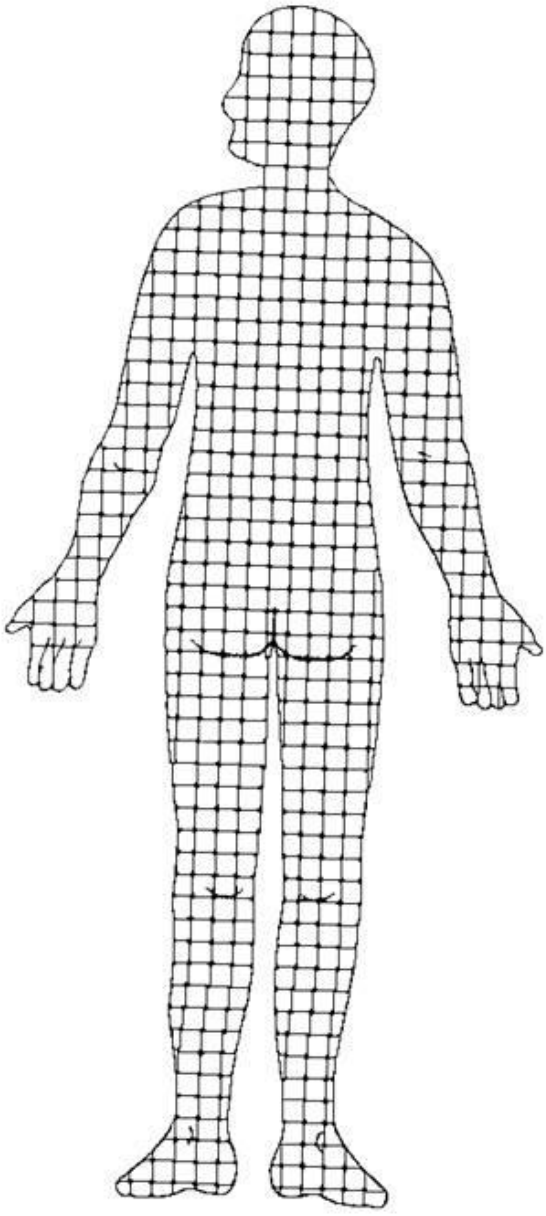
worst imaginable itch

6. Which parts of your child's body itched within the last 24 hours?

Please answer this question with your child and colour ALL boxes (skin areas) that itch(ed) your child.

front
back





Thank you very much for your help!

<u>Questions about the chronic itch (≥ 3 days per week over a period of ≥ 6 weeks)</u>

The following questions refer to chronic itch.

7a. How strong was your child's worst itch ever?

Please answer this question with your child and select the appropriate smiley to describe the itch intensity.

no itch

worst imaginable itch

7b. How strong was your child's worst itch ever during the day and during the night?

During the day

no itch

worst imaginable itch

During the night

no itch

worst imaginable itch

8. Did a doctor diagnose the cause of your child's chronic itch (≥ 3 days per week over a period of ≥ 6 weeks)?

□ yes □ no

If yes, please select the appropriate answer.
Multiple responses possible.

Disease	
Neurodermatitis	□
Dry skin	□
Ichthyosis	□
Hives (urticaria)	□
Drugs	□
If yes, which?	
_____	
Other dermatological diseases	□
If yes, which?	
_____	
Other causes	□
If yes, which?	
_____	

9. Impact of itch on your child's quality of life

How often does chronic itch (≥ 3 days per week over a period of **≥ 6 weeks**) disturb your child's **night sleep**?

□ never □ rarely □ sometimes □ often □ always □ I don't know

How often does chronic itch (≥ 3 days per week over a period of **≥ 6 weeks**) disturb your child's **ability to concentrate**, e.g. in school?

□ never □ rarely □ sometimes □ often □ always □ I don't know

How often does chronic itch (≥ 3 days per week over a period of **≥ 6 weeks**)disturb your child during his / her **leisure time activities,** e.g. playing or sports?

□ never □ rarely □ sometimes □ often □ always □ I don't know

How often was your child's mood affected by chronic itch (≥ 3 days per week over a period of **≥ 6 weeks**), e.g. sad or angry?

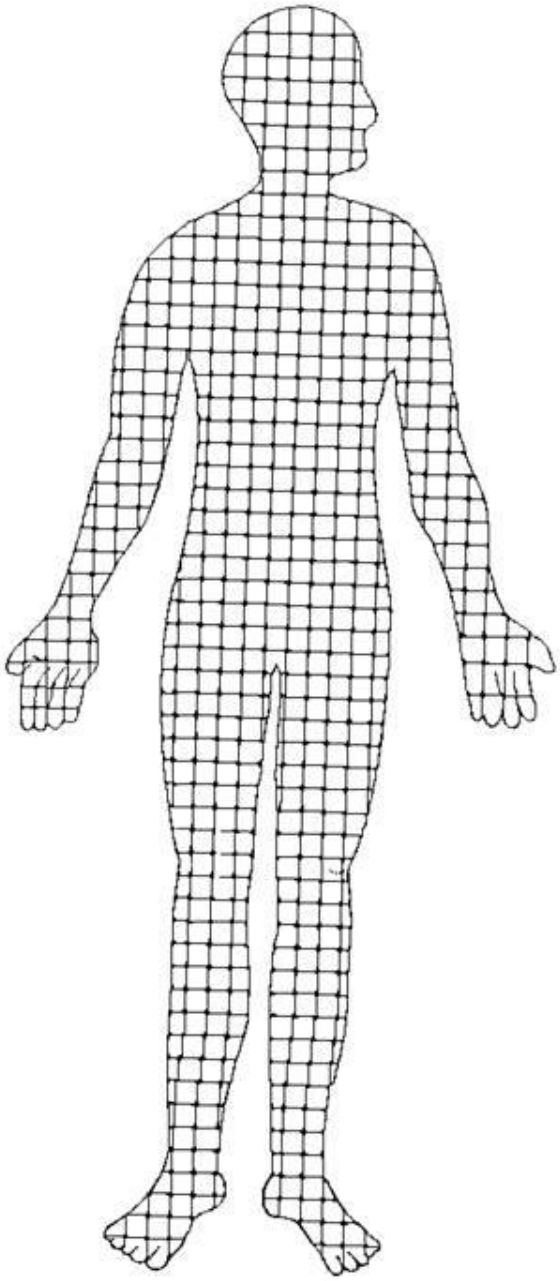
□ never □ rarely □ sometimes □ often □ always □ I don't know

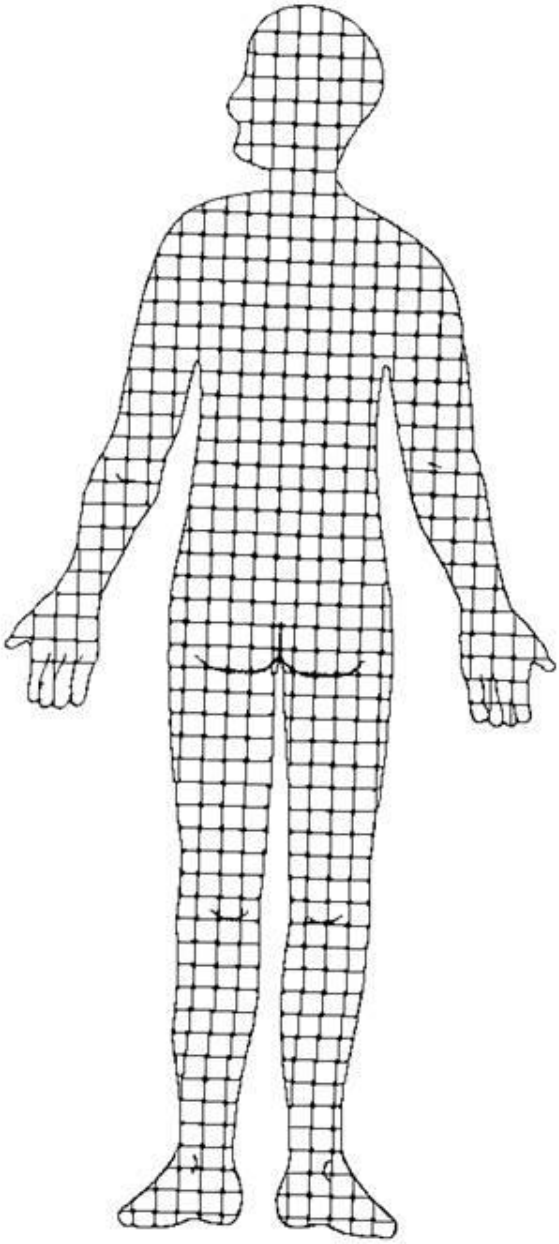
10. Which parts of your child's body itched in the past at least three days per week over a period of at least 6 weeks?

Please answer this question with your child and colour ALL boxes (skin areas) that itch(ed) your child.

front

back





11. Did your child get any treatment against itching (prescribed by a doctor)?

□ yes □ no

*If **yes**, who was the attending physician?*
Multiple responses possible.

□ Pediatrician
□ Dermatologist
□ General practitioner
□ Other doctor
If yes, which? _____

12. If your child has ever been treated due to itching, what kind of treatment did your child get (drugs or other treatment)?
Multiple responses possible.

Exterior treatment (ointment, cream):
□ Cortisone cream
□ Calcineurin inhibitors (e.g. Elidel®, Protopic®, Douglan®)
□ Other ointments or creams
If yes, which? _____

Internal treatment (pills, drops):
□ Antihistamines (allergy tablets)
□ Cortisone drugs
□ Cyclosporin (e.g. Immunosporin)
□ Other drugs
If yes, which? _____

Other treatment:
□ Homeopathy (globuli)
□ Acupuncture
□ Bioresonance
□ Other
If yes, which? _____

Thank you very much for your help!