

Clinical Letter

Development of a questionnaire to evaluate scratching behavior in patients with psoriasis and atopic dermatitis

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Dear Editors,

psoriasis vulgaris (PsV) is one of the most common chronic skin diseases in Germany with a prevalence of about 2–3 % [1]. Pruritus is a central and very distressing symptom for most patients with PsV [2]. Atopic dermatitis (AD) is associated with chronic pruritus in almost all patients, which usually starts in early childhood and is part of the diagnostic criteria [3]. Whereas pruritus is an established symptom in AD and can be assessed in the form of various questionnaires, skin itch is often underestimated by dermatologists in patients with PsV [4, 5]. This miscalculation may be due to scratch artifacts in patients with PsV being less frequently observed compared to patients with AD. Our aim was to better understand the difference in scratching behavior between patients with PsV and AD using a direct assessment from the

patient's perspective. The information obtained was used to develop a self-completion questionnaire for routine use.

To be able to map the specific scratching behavior, we resorted to behavior analytical models.

In a first step (January to February 2019), the behavior analytic SORKC model was used to conduct guided, individual interviews (22 items on itch and scratching) with 20 patients (10 each with PsV and AD and chronic pruritus) [6, 7]. Here, the problem behavior of the patients is defined in advance: “S” stands for the Stimulus (itching), “O” for the Organism variable (biological and psychological personal characteristics), “R” for Reaction (scratching behavior), “K” for contingency (chronological succession of reactions), and “C” for Consequences (somatic and psychological consequences of scratching) [7]. Based on the interviews, a total of 387 statements could be classified into eleven main categories (“self-assessment of severity”, “seasonal factors” “average scratching within the last week”, “daily scratching frequency”, “motor response to reduce itch”, “coping strategies”, “physiological response of the body”, “related thoughts while scratching”, “emotions while scratching”, “situational influencing factors”, “consequences of scratching behavior”) and their subcategories (Table 1) using the QDA Miner Lite (Provalis Research, 2004–2016) analysis software. Interestingly, it was found that all patients with PsV as well as AD

Table 1 Category system with main and subcategories of patient statements from the first study phase.

Main category	Subcategory	Statements (n)	Statements (%)	Cases (n)	Percent of patient cases (%)
Self-assessment of severity	Severe	6	1.6	6	30
	Average	12	3.1	11	55
	Mild	2	0.5	2	10
	Total	20		19	
Seasons	Winter	9	2.3	9	45
	Summer	4	1.0	4	20
	No seasonal correlation	7	1.8	7	35
	Total	20		20	
Average scratch intensity within the last week	NRS 0–5	5	1.3	5	25
	NRS 6–10	15	3.9	15	75
	Total	20		20	
Daily scratching frequency	Low	2	0.5	2	10
	Moderate	3	0.8	3	15
	High	9	2.3	9	45
	Constant	5	1.3	5	25
	Mainly at night	15	3.9	13	65

Continued

Table 1 Continued.

Main category	Subcategory	Statements (n)	Statements (%)	Cases (n)	Percent of patient cases (%)
Situational factors	Mainly during the day	3	0.8	3	15
	No daytime fluctuations	4	1.0	4	20
	Total	41		39	
	Stress	15	3.9	11	55
	No external influencing factors	8	2.1	8	40
Situational factors	At rest increase in scratching behavior	6	1.6	6	30
	Feeling balanced reduces scratching behavior	1	0.3	1	5
	Total	30		26	
Motor response to reduce pruritus	Use of aids	23	5.9	14	70
	Scratching in the lesion area	17	4.4	16	80
	Back and forth movement (scratching)	15	3.9	15	75
	Generalized scratching	5	1.3	5	25
	Circular movements	2	0.5	2	10
	Tapping movements	1	0.3	1	5
	Scratching at alternative site	1	0.3	1	5
	Total	64		54	
Coping strategies	Distraction strategy used	23	5.9	15	75
	No attempt at alternative activity	9	2.3	5	25
	Total	32		20	
Physiological reaction of the body	Direct bleeding	13	3.4	12	60
	Occasional bleeding	10	2.6	7	35
	Pain/burning	10	2.6	6	30
	Skin lesions	11	2.8	11	55
	Altered body perception	10	2.6	9	45
	(Limited) cessation of itch	3	0.8	3	15
	Increase in itch	3	0.8	3	15
	Physical exhaustion	3	0.8	2	10
	Persistence itch	1	0.3	1	5
	Total	64		54	

Continued

Table 1 Continued.

Main category	Subcategory	Statements (n)	Statements (%)	Cases (n)	Percent of patient cases (%)
Related thoughts while scratching	Desire for a change in itching situation	16	4.1	16	80
	Negative, hopeless thoughts	11	2.8	8	40
	No thoughts	6	1.6	6	30
	Positive, hopeful thoughts	3	0.8	3	15
	Total	36		33	
Emotions while scratching	Neutral	13	3.4	12	60
	(Short-term) relief	13	3.4	9	45
	Distracting	11	2.8	11	55
	Negative	6	1.6	6	30
	Distressing	6	1.6	5	25
	Upsetting	3	0.8	3	15
	Total	52		46	
Consequences of scratching behavior	Long-term negative consequences (mood)	8	2.1	7	35

reacted to a perceived itch by scratching. A large proportion of the patients' statements ($n = 15$) specifically mentioned that they considered stress to be an influencing factor on their scratching behavior. Patients reported a variety of tools used and showed a great deal of creativity in managing their personal scratching behavior. Twenty-three statements were

assigned to the main category of "coping strategies" describing employed methods of distraction against scratching. A total of 64 statements were grouped under the main category "physiological response of the body." A total of 36 statements could be assigned to the main category "related thoughts while scratching". A total of 52 statements could be assigned

Table 2 Category system with main and subcategories of the statements of the patients from the second study phase.

Main category	Subcategory	Statements (n)	Statements (%)	Cases (n)	Percentage of patient cases (%)
Design and structure	Brevity	15	23.8	15	75
	Clarity	2	3.2	2	10
	Total	17		17	
Content	Comprehensibility	16	25.4	16	80
	Variety of question selection	12	19.0	12	60
	Total	28		28	
Dealing with questions	Own reflection	8	12.7	8	40
	Critical consideration of questions	8	12.7	7	35
	Missing aspects	2	3.2	2	10
	Total	18		17	

Questionnaire for the assessment of scratching behavior
Psoriasis Center Kiel, Clinic for Dermatology, Venereology and Allergology, UKSH, Kiel Campus

Questionnaire No.: _____ Date of Birth: _____

Interview date: _____ **Please answer each question:**

- 1. When your skin itches, do you scratch?**
☐ No, never (the survey is now closed for you) ☐ Yes (please continue to question 2)
- 2. In what situations or at what times of day do you scratch your skin?** (Multiple answers possible)
☐ my scratching does not depend on specific situations or times of day (please continue with question 3)
☐ during the day ☐ at night ☐ at rest ☐ under stress
- 3. Does your scratching behavior increase during a certain season?** (Multiple answers possible)
☐ No (please continue to question 4)
☐ Yes If yes: when? ☐ in spring ☐ in summer ☐ in fall ☐ in winter
- 4. In the last 4 weeks, have you had to scratch your skin permanently, in phases, or only for a short time?**
☐ permanent (daily) ☐ in phases (3-6 x per week) ☐ short-term (1-2 x per week)
- 5. How do you scratch?** (Multiple answers possible)
☐ Back and forth movements ☐ scrubbing ☐ stroking/massaging
☐ tapping ☐ encircling ☐ pinching ☐ other: _____
- 6. Do you need any aids for scratching?** (Multiple answers possible)
☐ No, I do not need any aids (please continue with question 7)
☐ fingernails ☐ furniture edges (also door frames) ☐ pointed objects (pen, scissors)
☐ blunt objects (brush, spoon, towel) ☐ long objects (back brush, folding rule)
☐ Other: _____
- 7. How much have you scratched yourself in the last three days?**
 (please mark the intensity with a vertical line on the scale)
 not at all 0 | | | | | | | | | | 10 extremely much
- 8. Do you use additional cold objects or liquids?** (Multiple answers possible)
☐ No (please continue to question 9)
☐ cold cloth ☐ cold water ☐ cold pack ☐ cream
☐ Other: _____
- 9. Do you use additional warm objects or liquids?** (Multiple answers possible)
☐ No (please continue to question 10)
☐ warm cloth ☐ warm water ☐ Other: _____
- 10. What symptoms do you notice during scratching and/or afterwards?** (Multiple answers possible)
☐ redness ☐ scratch marks ☐ open sores ☐ bleeding ☐ pain
☐ worsening of skin itching
☐ Other: _____
- 11. How do you feel while scratching?** (Multiple answers possible)
☐ relieved ☐ angry ☐ annoyed ☐ I have a bad conscience
☐ Other: _____
- 12. How do you feel after scratching?** (Multiple answers possible)
☐ relieved ☐ angry ☐ annoyed ☐ I have a bad conscience
☐ Other: _____

Thank you for your participation!

Figure 1 Final questionnaire to record scratching behavior.

to the main category “emotions while scratching” (Table 1). The qualitative evaluation of the statements revealed that scratching behavior is of great relevance in patients with PsV and AD and has negative effects in the somatic as well as psychological domain. These results served as a basis for the development of a self-completion questionnaire with twelve questions.

In a second step (November 2019 to March 2020), an additional 20 patients (10 each with PsV and AD and chronic pruritus) answered this questionnaire independently. Subsequently, structured, individual interviews were again conducted regarding the comprehensibility of the self-completion questionnaire. The patients' statements were again assessed by content analysis. A total of 63 statements could

be divided into three main categories (“content”, “design and structure”, “dealing with questions”) and their respective subcategories (Table 2). The most frequent statements ($n = 28$) could be assigned to the main category “content” and addressed the good comprehensibility of the individual areas surveyed as well as the variety of possible choices for the individual questions. The issue of practicability was particularly important to the patients. Within the main category “design and structure”, the majority of patients ($n = 15$) stated that the clarity in the presentation of questions and, above all, the speed with which they could be completed, were perceived as very positive. Eighteen statements could be assigned to the main category “dealing with content” and focus on potentially ambiguous and missing aspects in the questionnaire. Based on these results, we conclude that relevant health needs of patients can be queried and recorded in an intelligible manner by means of the newly developed, specific self-completion questionnaire. After a concluding review, the questionnaire on scratching behavior could be finalized (Figure 1).

In summary, knowledge about scratching behavior in chronic dermatological diseases is still limited. This qualitative study provides a suitable questionnaire with which a better understanding of scratching behavior and the resulting clinical skin findings can be gained. The present questionnaire can complement existing questionnaires for assessing skin itch to provide a holistic understanding of itch and the resulting scratching behavior. In addition, patients who suffer particularly from the emotional and physiological components of scratching can be identified. Patient-centered stressful situations can be identified at an early stage to support patient-specific counseling in daily practice. This self-completion questionnaire for the assessment of scratching behavior will also be presented to a large collective of patients with PsV and AD, and will provide important additional information for long-term, effective management of this patient population.

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Conflict of interest
None.

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