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## RATIONNEL

Chronic hand eczema is characterized by dryness, redness, itching, and hyperkeratosis, resulting in persistent symptoms that interfere with daily activities, social functioning, and workability.

This study sought to develop a self-administered questionnaire in French for assessing the Burden of Hand Eczema (BoHEM), then translate and linguistically and cross-culturally validate it into American English.

## METHOD

We failed to find in the literature any specific tool that aimed to assess the burden experienced by patients with CHE. Such a tool would be of valuable for both patients and clinicians that manage daily patients with CHE. Indeed recently, the concept of "burden" has been given a central role for evaluating patient care.<sup>1</sup> The self-administered BoHEM (Burden of Hand EczeMa) questionnaire was developed using standard methodology that included three distinct phases: conception, developmental, and validation<sup>2</sup>. Each phase followed a strict methodological process, implicating a multidisciplinary team of dermatologists, patients, and experts in patient-reported outcomes. The original BoHEM questionnaire was developed in French. A linguistic and cross-cultural validation following a previously-validated methodology<sup>3</sup> was applied in order to generate an American English-language version.

## RESULTS

The initial conceptual phase involved 15 patients who shared their complaints, perceptions, and experiences in relation to CHE, following which 15 items were retained and formed the conceptual questionnaire [Two questions were removed because they were not related to a particular factor]. Principal component factor exploratory analysis was performed to test the questionnaire's robustness. Using standardized regression analysis, three dimensions were highlighted (Table I): "daily life" composed of 8 questions; "look of others" [5 questions] and "relationships" [2 questions].

The BoHEM's unidimensionality was confirmed by higher order factor analysis. The practical model-fit indices were acceptable, with a comparative fit index of 0.9531 and a non-normed fit index of 0.9783. The model appeared well-adjusted and well-fitted, offering the possibility to group the three dimensions into one overall score. Concerning its reliability, Cronbach's alpha coefficient<sup>4</sup> was 0.913 for the entire questionnaire, reflecting its excellent internal coherence. The BoHEM correlated highly with other validated questionnaires. Correlation coefficients between BoHEM and validated questionnaires were relatively high, confirming their strong association and thus, BoHEM's external validity (Table II). Cognitive debriefing did not result in any major changes to questions' wording.

In last, the test-retest reliability was obtained from 32 evaluable subjects (day zero and day 10), showing very good reproducibility. The intraclass correlation of each dimension was greater than 0.88 for each domain. The BoHEM results can be expressed as a total score between 0 [no impact] and 75 [highest possible impact]

## DISCUSSION

There has been so far no specific instrument available to assess the burden of CHE. The current report provides support of BoHEM's feasibility, reliability, and validity as a specific instrument designed to fill this unmet need. With its 15 items, the BoHEM is relatively short and easy to use. The questions are simple and easy to understand so that it can be used by anyone. We hope that BoHEM will serve as a valuable tool for healthcare providers to evaluate better patients' burden. BoHEM will likely facilitate communication between patients and healthcare providers, create a real opportunity for the practitioner to better understand the multiple issues lived up by the patients

### Loading of questions on the factors after rotation

ITEM	FACTOR 1	FACTOR 2	FACTOR 3
I have difficulty performing everyday activities.	0.65	0.27	0.05
My professional activities are impacted.	0.62	0.38	0.05
I have difficulty grooming (styling hair, washing, shaving).	0.69	0.17	0.21
I have had problems at work due to my chronic hand eczema.	0.65	0.25	0.08
Daily care for my chronic hand eczema is immensely tiring.	0.76	0.04	0.27
It seems to me that my chronic hand eczema is costing me more and more.	0.70	0.17	0.22
My chronic hand eczema affects my quality of sleep negatively.	0.69	0.23	0.21
I believe that my life would have been different without chronic hand eczema.	0.61	0.25	0.28
When I show my hands, the looks from other people embarrass me.	0.32	0.70	0.22
I hesitate to shake hands when meeting someone.	0.35	0.56	0.15
I tend to keep my hands in my pockets.	0.15	0.80	0.15
I don't know where to put my hands anymore when at work.	0.17	0.82	0.17
Interacting with others is difficult.	0.41	0.50	0.46
I have a troubled emotional life.	0.28	0.26	0.84
The appearance of my hands (redness, dryness) affects my sex life.	0.18	0.17	0.86

### Correlation coefficients between BoHEM score and four self-administrated questionnaires

Pearson correlation coefficients, N = 280 Prob >  r  under H0: Rho=0						
	CES-D	SF12-PHYSICAL	SF12-MENTAL	PSS	DLQI	BOHEM
CES-D	1	-0.06 (p=0,36)	-0.79 (p<0,01)	0.78 (p<0,01)	0.46 (p<0,01)	0.40 (p<0,01)
SF12-PHYSICAL	-0.06 (p=0,36)	1	-0.14 (p=0,02)	0.01 (p=0,84)	-0.47 (p<0,01)	-0.42 (p<0,01)
SF12-MENTAL	-0.79 (p<0,01)	-0.14 (p=0,02)	1	-0.67 (p<0,01)	-0.43 (p<0,01)	-0.37 (p<0,01)
PSS	0.78 (p<0,01)	0.01 (p=0,84)	-0.67 (p<0,01)	1	0.36 (p<0,01)	0.33 (p<0,01)
DLQI	0.46 (p<0,01)	-0.47 (p<0,01)	-0.43 (p<0,01)	0.36 (p<0,01)	1	0.79 (p<0,01)
BOHEM	0.40 (p<0,01)	-0.42 (p<0,01)	-0.37 (p<0,01)	0.33 (p<0,01)	0.79 (p<0,01)	1