

Hand and wrist/forearm eczema, pilot prospective procedure to validate the short Spanish version of the Nordic Occupational Skin Questionnaire (NOSQ-2002)

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Background

It is estimated that skin diseases account between 9 and 35% of all professional diseases^{1,2}. Dermatitis or contact eczema is among the most common occupational skin disease in most European and industrialized countries³. The incidence of contact eczema range from 0.5-1.9 cases per 1000 workers-year⁴, and represents between 80% and up to 90-95% of all occupational dermatosis⁵. The point prevalence of hand eczema was around 4%, the 1 year prevalence nearly 10%⁶ and the lifetime prevalence reached 15%⁷. The incidence of hand eczema in the general population is 5.5 cases per 1000 population-year (3.3-8.8)⁷. The estimated average duration of illness is 11.6 years⁸ and even though, this condition progress with outbreaks and relapses. Up to 12% shows continuous symptoms⁹ and up to 10% must change its profession⁷. The short version of the NOSQ-2002 questionnaire screens occupational hand and wrist/forearm eczema.

Objective

There is a need, to validate the cross-culturally adapted Spanish short version of the NOSQ-2002 questionnaire¹⁰. To do so, we performed a prospective pilot approach and a retrospective evaluation based on 2.500 clinical histories registered since 2004, at the Unit for the Study of Contact Eczema in our Department of Dermatology. From the complete (prospective and retrospective) procedure to validate the Spanish cross-cultural adapted short NOSQ-2002 questionnaire, the pilot prospective study is presented.

Methodology

A prospective observational case-control study, which included 80 workers from different cleaning companies in Barcelona, with or without hand and/or wrist /forearm eczema was performed. A fellow in Occupational Medicine conducted a guided oral clinical history and a complete dermatologic physical examination. The employee answered independently the Spanish short version of the NOSQ-2002 questionnaire. The dermatologic physical examination paid special care with hands, wrists and forearms taking at least three pictures following a standardized protocol. All these images were assessed blindly by an expert dermatologist in contact eczema. The gold standard was the evaluation of hand and wrist eczema made by the occupational physician. The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) for questions D1 (hand eczema), D2 (wrist / forearm eczema) and D5 (presence active eczema) from the Spanish short version NOSQ-2002 questionnaire was calculated. Subsequently we evaluated the diagnostic concordance between the occupational physician and the blinded assessment of hand or wrist/forearm pictures made by the expert dermatologist. All the study was performed according the Helsinki declaration and the Protection Data laws.

Results

The sample analyzed includes cleaning 80 workers. They were mainly employees from different cleaning companies in Barcelona. The 90% of them were women with an average age of 46'9 years ($SD \pm 9'84$ y). The 27.5% of the sample were immigrants or foreign people.

Thirty two (40%) answered YES to the question D1 (eczema of hands) and 18 (22.5%) who answered YES to the question D2 (wrist / forearm). Ten people (12.5%) answered both questions affirmatively (eczema of hands and wrists / forearms). The prevalence observed at the time of exploration was 21'25% for hand eczema and 5% for the wrist / forearm eczema (Fig. 1 and 2).

Using as a "gold standard" the clinical history and the clinical examination done by the occupational physician and the assessment of the pictures done by the dermatologist, sensitivity of the question D1 was respectively 100% (95% CI: 89'3-100%), 75% (95% CI: 50'5-89'8%), 76'5% (95% CI: 52'7-90'4%) and specificity of 100% (95% CI: 92'6-100%), 68'8% (95% CI: 56'6-78'8%), 69'8% (95% CI: 57'6-79'8%). The PPV was 100% (95% CI: 89'3-100%), 37.5% (95% CI: 22'9-54'7%) and 40'6% (95% CI: 25.9-57'7%) and NPV was 100% (95% CI: 92'6-100%), 91'7% (95% CI: 80'4-96'7%) and 91'7% (95% CI: 80'4-96'7%). The agreement between the occupational physician and the dermatologist was 96'25% (Kappa Index 0'8859) (Fig. 3).

Following the same criteria for question D2 we found a 100% (95% CI: 82'4-100%), 75% (95% CI 51-100%) and 100% (95% CI 51-100%) sensitivity respectively. The specificity was respectively 100% (95% CI: 94'2-100%), 81'6% (95% CI: 71'4-88'7%) and 81'6% (95% CI: 71'4-88'7%). The PPV found was 100% (95% CI: 82'4-100%), 22'2% (95% CI: 9-45'2%) and 22'2% (95% CI: 9-45'2%). The NPV was 100% (95% CI: 94'2-100%), 100% (95% CI: 94'2-

The questions to be validated are:

Las preguntas a validar fueron:

D1. ¿Ha tenido alguna vez **eczema en las manos?** (por eczema se entiende alguno de estos signos en las manos: manchas rojas, ampollas o bolitas de agua, fisuras o grietas que pican o duelen) No / Sí

D2. ¿Ha tenido alguna vez **eczema en las muñecas o en los antebrazos?** (excluyendo la parte interior o anterior del codo) (por eczema se entiende alguno de estos signos en las muñecas/antebrazos: manchas rojas, ampollas o bolitas de agua, fisuras o grietas que pican o duelen) No / Sí

" 100%) and 100% (95% CI: 94'2-100%). The diagnostic agreement between the occupational physician and the dermatologist was also about a 100% (Kappa index 1) (Fig. 4). From the 32 workers who answered YES to the question if they ever had hand eczema the 71'87% linked their cutaneous disorder with certain materials or chemicals involved during the daily work. The 90'62% did not relate the disease with substances or materials outside the work and a 68'75% referred improvement during weekends or holidays.

From the 18 workers who answered YES to the question if they ever had wrist/forearm eczema the 55'55% related their cutaneous disorder with certain materials or chemicals involved at the work. The 83'33% did not relate the disease with substances or materials outside the work and a 38'88% referred improvement during weekends or holidays (Fig. 5).

The main substances or materials to which workers associated their eczema were gloves (8 workers, of which 2 referred to latex, 4 to rubber and one to vinyl), general cleaning products (n=6), degreasers (n=4), bleach (n=3), aldehyde compounds (n=2) and ammonia (n=2).

From the 32 patients who answered YES if they ever had hand eczema, 5 (12.5%) showed it during the exploration (question D5). Using as a "gold standard" the assessment by the occupational physician the sensitivity was 25% (95% CI: 10'2-49'5%), specificity 100% (95% CI: 80'6-100%), PPV 100% (95% CI 51-100%) and NPV 57'14% (95% 39'1-73'5%).

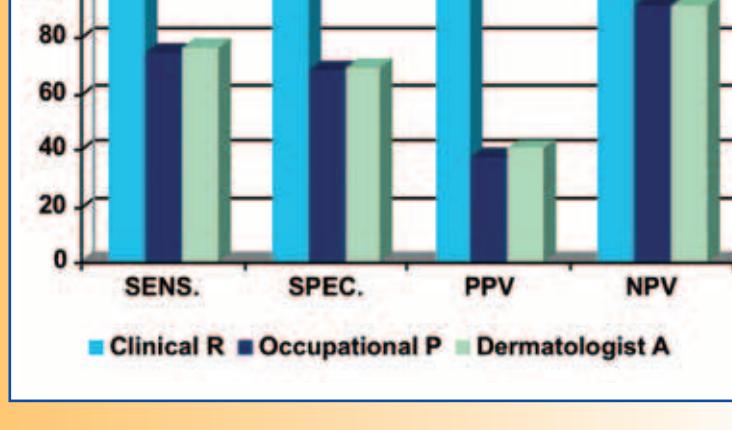
With regard to wrist / forearms eczema from the 18 patients who reported having it once, only 2 (11'11%) showed it at the time of exploration. Sensitivity for question D5 concerning wrist / forearms eczema was 50% (95% CI 15-85%), specificity of 100% (95% CI: 78'5-100%), PPV of 100% (95% CI: 34'2-100%) and NPV of 87'5% (CI 95%: 64-96'5%).



Fig. 5. Questions F1, F2, F4

	Get worst during work	Get worst out of work	Get better in holidays
YES D1	32	23	3
Hand Eczema	40%	28.75%	3.75%
	100%	71.87%	9.37%
NO D1	48	0	0
Hand Eczema	60%		
	100%		
YES D2	18	10	3
Wrist/forearm Eczema	22.5%	12.5%	3.75%
	100%	55.56%	16.66%
NO D2	62	0	0
Wrist/forearm Eczema	77.5%		
	100%		

Fig. 3. HAND ECZEMA RESULTS:



Clinical Records:

Sens: 100% (IC95%: 89'3-100%)
Sepc: 100% (IC95%: 92'6-100%)
PPV: 100% (IC95%: 89'3-100%)
NPV: 100% (IC95%: 92'6-100%)

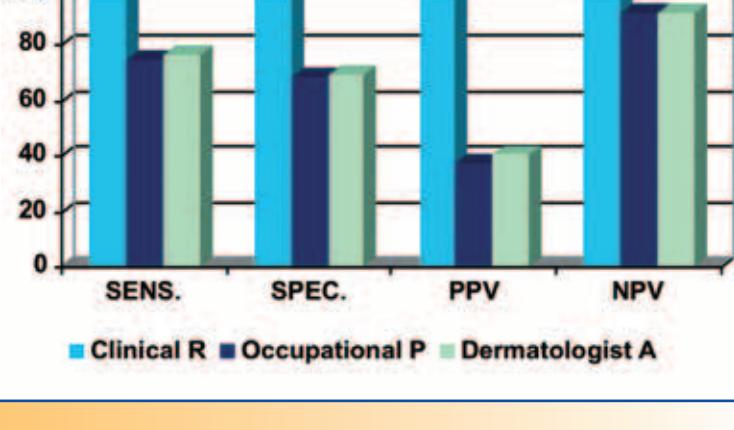
Occupational Physician:

Sens: 75% (IC95%: 50'5-89'8%)
Sepc: 68'8% (IC95%: 56'6-78'8%)
PPV: 37'5% (IC95%: 22'9-54'7%)
NPV: 91'7% (IC95%: 80'4-96'7%)

Dermatologist assessment:

Sens: 76'5% (IC95%: 52'7-90'4%)
Sepc: 69'8% (IC95%: 57'6-79'8%)
PPV: 40'6% (IC95%: 25'9-57'7%)
NPV: 91'7% (IC95%: 80'4-96'7%)

Fig. 4. WRIST/FOREARM RESULTS:



Clinical Records:

Sens: 100% (IC95%: 82'4-100%)
Sepc: 100% (IC95%: 94'2-100%)
PPV: 100% (IC95%: 82'4-100%)
NPV: 100% (IC95%: 94'2-100%)

Occupational Physician:

Sens: 75% (IC95%: 51-100%)
Sepc: 81'6% (IC95%: 71'4-88'7%)
PPV: 22'2% (IC95%: 9-45'2%)
NPV: 100% (IC95%: 94'2-100%)

Dermatologist assessment:

Sens: 100% (IC95%: 51-100%)
Sepc: 81'6% (IC95%: 71'4-88'7%)
PPV: 22'2% (IC95%: 9-45'2%)
NPV: 100% (IC95%: 94'2-100%)

Conclusion

With the limitations of this first prospective phase for the Spanish short NOSQ-2002 questionnaire validation we can predict that after the retrospective phase done in a biggest sample the screening questions for hand and wrist eczema would be validated. We highlight the good correlation between the occupational physician and the dermatologist assessment. A validated questionnaire will be useful for future hand eczema studies.

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