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Validity and reliability of the Italian version of the Hand Mobility in Scleroderma (HAMIS) scale

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Background

In Systemic Sclerosis (SSc), hand disability is due to finger contractures, reduced motion of thumb and wrist and to arthralgias, arthritis, ulcers, calcinosis.

HAMIS scale assesses SSc hand function by 9 items evaluating finger flexion and extension, thumb abduction, dorsal extension and volar flexion of wrist, pronation and supination of forearm, ability to make a thumb pincer grip and finger abduction. HAMIS is composed by different-sized grips and exercises, related to tools and movements that are part of daily occupations. Each exercise is graded on a 0–3 scale (0= normal function and 3= inability to perform the task) (1).

Our aim is to validate the Italian version of HAMIS, by assessing its test–retest reliability, internal consistency, and external consistency in Italian SSc patients.

Methods

40 SSc patients (7 dSSc, 33 ISSc; age and disease duration: 57.3±11.2, 9.0±3.8 years) were evaluated with HAMIS scale, Duruoz index, fist closure, HAQ, Physical (PSI) and Mental Summary Index (MSI) of SF-36 and modified Rodnan skin score.

HAMIS was translated by a forward–backward translation procedure, with independent translations to Italian and counter-translation to English, according to international methodology (2).

Test–retest reliability was assessed, comparing the results of the first and second administration, by intra-class correlation coefficient (ICC), internal consistency by Cronbach's alpha and external consistency by comparison with Duruoz index, fist closure, HAQ.

RESULTS

In SSc, HAMIS scale scores for right and left hands were 7.95±6.68 and 7.5±6.6, respectively. In both hands, HAMIS scale was significantly higher in dSSc than in ISSc (table).

HAMIS scale showed a good test–retest reliability (ICCs>0.75) and internal consistency (Cronbach's alpha>0.7) for both hands. A good external consistency was confirmed by the correlation of right and left hand HAMIS with Duruoz index (rho: 0,8416; P<0.0001; rho: 0,8135; P<0.0001, respectively), fist closure (rho:0,8250; P<0.0001; rho:0,8026; P<0.0001, respectively), HAQ (rho: 0,5409; p:0,0003; rho: 0,5314; p:0.0004, respectively).

Right and left hand HAMIS also correlated with PSI (rho:-0,3627, p:0,0214; rho:-0,3744, p:0,0173, respectively) and MSI (rho:-0,3625, p: 0,0215; rho: -0,3744, p: 0,0318, respectively). HAMIS did not correlate with Skin Score.

CONCLUSION

HAMIS scale measures specifically SSc hand disability. Our results support its validity and reliability in Italian SSc patients.

References

1.Sandqvist G, Eklund M. Arthritis Care Res. 2000; 2. Lassere MN. Osteoarthritis Cartilage. 2006

Table: SSc patients characteristics	
Sex (F/M)	35/5
dSSc/ISSc	7/33
Age (mean ± SD)	57.3±11.2
Disease duration (years) (mean ± SD)	9.0±3.8
Skin Score (mean ± SD)	11.5±6.8
Active ulcers (yes/no)	18/22
Raynaud (yes/no)	40/0

Musculo-skeletal involvement (yes/no)	40/0
Oesophagus (yes/no)	27/13
ILD (yes/no)	10/30
PAH (yes/no)	6/34
HAMIS (mean \pm SD)	7,67 \pm 6,58
Durouze (mean \pm SD)	24,03 \pm 21,84
Fist closure* (cm)(mean \pm SD)	1,65 \pm 1,95
MSI (SF-36) (mean \pm SD)	40,91 \pm 8,09
PSI (SF-36) (mean \pm SD)	36,42 \pm 9,05
HAQ (mean \pm SD)	0,82 \pm 0,91

Legend: ILD= interstitial lung disease; PAH= pulmonary hypertension; Durouze= Durouze index HAMIS= Hand Mobility in Scleroderma scale; MSI =Mental Synthetic Index; PSI =Physical Synthetic Index; HAQ= Health Assessment Questionnaire