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**The Italian version of the mouth handicap in Systemic Sclerosis scale (MHISS) : evidence for its validity and reliability**

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**Background**

In Systemic Sclerosis (SSc), the involvement of mouth and face leads to alterations in mouth function, sicca syndrome and aesthetic modifications.

MHISS specifically evaluates handicap associated with mouth disability in SSc (1). Our aim is to validate the Italian version of MHISS, by assessing its test–retest reliability, internal and external consistency in Italian SSc patients.

**Methods**

40 SSc patients (7 dSSc, 33 ISSc; 6 men, 34 women; mean age and disease duration: 57.27±11.41 and 9.4± 4.4 years); 22 with sicca syndrome) were evaluated by MHISS scale, mouth opening (cm), SF-36 summary physical (SPI) and mental index (SMI), HAQ, modified Rodnan skin score.

MHISS is organized in 12 items (each scored 0-4, with a total score 0-48) and divided in 3 subscales, the first examining handicap related to reduced mouth opening (items 1, 3, 4, 5 and 6), the second and the third assessing handicap related to sicca syndrome (items 2, 7, 8, 9 and 10) and aesthetic concerns (items 11 and 12). MHISS 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 evaluated, comparing the results of the first and second administration, by intra-class correlation coefficient (ICC), internal consistency by Cronbach's  $\alpha$  and external consistency was assessed by comparison with mouth opening.

**Results**

Total MHISS score, scores of subscales 1, 2 and 3 are shown in the table. Total score and score of subscale 2 are higher in dSSc than in ISSc patients (table). The latter result may be explained by the prevalence of sicca syndrome in dSSc in respect to ISSc (7/7-100% versus 15/33 -45.5%-, 0.0109 by Fisher exact test) (table).

MHISS has a good test–retest reliability (ICC: 0.91) and internal consistency (Cronbach's  $\alpha$ :0.99). A good external consistency was confirmed by the significant correlation of MHISS with mouth opening ( $\rho$ : -0,3869, p: 0.0137). MHISS was no significantly related with HAQ, SF-36 SMI and SPI and skin score.

**Conclusion**

MHISS specifically measures mouth handicap in SSc patients and evaluates aspects not assessed by HAQ and SF 36. Our results support its validity and reliability in Italian SSc patients. The lower values of MHISS total score and subscales in our series in respect to the original one (1) may be explained by the high presence of ISSc patients in our series (table).

**Table**

	SSc	ISSc	dSSc	P (dSSc vs ISSc)
MHISS subscale 1 (handicap related to reduced mouth opening)	6.60 ± 2.85	6.45 ± 2.98	7.28 ± 2.21	NS
MHISS subscale 2 (handicap related to sicca syndrome)	7.82 ± 2.59	7.45 ± 2.65	9.57 ± 1.27	0.0187
MHISS F3 subscale 3 (handicap related to aesthetic concerns)	3.22 ± 1.14	3.15 ±1.17	3.57 ± 0.97	NS
MHISS total	17.65±5.20	17.06 ± 5.42	20.43 ± 2.88	0.0224

**References:** 1. Mouthon et al. Ann Rheum Dis 2007;66:1651-5; 2. Lassere MN. Osteoarthritis Cartilage. 2006;14 Suppl A:A10-3.