



Translation, Cultural Adaptation and Validation of the Standardized Cosmesis and Health Nasal Outcomes Survey (SCHNOS) in Italian



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Abstract

Backgrounds Rhinoplasty necessarily concerns functional and cosmetic aspects, and outcomes of both should be assessed in each patient. There has been a lack in the literature in Italian for a comprehensive tool for assessing both aspects of rhinoplasty. The objective is to translate and validate the Standardized Cosmesis and Health Nasal Outcomes Survey (SCHNOS) into Italian.

Methods Forward and back-translation was used. Content validity was evaluated by experts and by patient interviews. Internal consistency was assessed by a Cronbach's alpha. The structure validity was assessed by an exploratory factor analysis.

Results Cognitive interviews of 10 rhinoplasty patients resulted in a good overall comprehension of the SCHNOS. Of the 411 respondents, 281 (32%) were women, and the average age was 33.6 (11.3) years. The alpha was excellent for both the obstruction domain (SCHNOS-O) (0.90) and the cosmetic domain (SCHNOS-C) (0.94). All the correlations between repeated measures were moderate to very strong. The exploratory factor analysis demonstrated

unidimensionality of both the SCHNOS-O and the SCHNOS-C scores.

Conclusions The SCHNOS was successfully translated and validated in Italian and can be recommended for a clinical use among rhinoplasty patients.

Level of Evidence III This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors www.springer.com/00266.

Keywords Rhinoplasty · Patient-reported outcome measures · Validity · Reliability · Psychometrics · Italian

Introduction

Rhinoseptoplasty is one of the most frequent and challenging procedures in aesthetic surgery. Commonly, rhinoplasty surgeons have to address both function and form even in solo aesthetic rhinoplasty. In many situations, rhinoplasty patients complain about both functional and aesthetic issues. Self-perception in aesthetic surgery plays a crucial role in medical planning, and the surgeon's awareness of this is of utmost importance. In this perspective, a validated quantification instrument can help physicians to plan the surgical treatment to meet patient's requirements.

Patient-related outcomes measures (PROMs) are intended to be validated, replicable and informative instruments to better understand patients' pre- and post-operative conditions. Although different types of questionnaires already exist in the literature and clinical practice, only a few of them are directly targeted to rhinoseptoplasty patients. Moreover, they usually only address one single domain at a

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time, the cosmetic or functional one, yet both are important to assess in all rhinoplasty patients [1].

To date, Italian rhinoplasty surgeons may rely only on the validated version of the Nasal Obstruction Symptom Evaluation (I-NOSE) [2] scale or on Italian SNOT-22 [3] to assess the solely patient-reported nasal function. On the other hand, the cosmetic domain is addressed by FACE-Q [4], but even this test is vitiated by the exclusive inquiry of the aesthetic part [5]. Only the Standardized Cosmesis and Health Nasal Outcomes Survey (SCHNOS) is characterized by combinatory exploration of the two fundamental domains, containing an obstructive and a cosmetic scale. In its original version [6], SCHNOS questionnaire is characterized by high internal consistency, displaying an excellent Cronbach α for both domains. Exploratory factor analysis has demonstrated the unidimensionality and the high validity of this tool. Furthermore, the composite SCHNOS obstructive scale shows a very good correlation with the NOSE questionnaire; therefore, it may be administered without the NOSE scale to assess the nasal obstruction [6]. Given the good correlation to specific psychiatric screening tools, it also demonstrated a potential role in preoperative screening of rhinoplasty patients for body dysmorphic disorders [7], considered crucial in aesthetic surgery. Moreover, SCHNOS showed optimal discrimination between different subgroups of patients (pre- and post-operative conditions, cosmetic or functional rhinoplasty, and non-rhinoplasty patients) with a high potential in following the natural history of patients who undergo rhinoplasty, as reported by Kandathil et al. [8] The original SCHNOS has been already validated in Spanish [9], French [10], Turkish [11], Arabic [12], Persian [13] and others. All these translations are endowed with high internal consistency, reliability and validity as the original one. However, at present, a validated Italian version does not exist.

This study aimed to translate and validate the Standardized Cosmesis and Health Nasal Outcomes Survey in the Italian language [6, 8].

Material and Methods

The present study protocol was approved by the Institutional Review Board, at the clinical research centre where it has been conducted, as a prospective observational study (Protocol number: Rhinoplasty2020; decision number: 38/INT/2020). It was carried out between 1 May 2020 and 1 May 2021.

Italian translation and cultural adaptation of the SCHNOS was conducted in a two-phase validation process (translational phase and psychometric validation phase), with respect to the International Society for

Pharmacoeconomics and Outcomes Research guidelines (Fig. 1) [14].

Translation Process

The first phase consisted of a multistep translation and adaptation process. First of all, a forward translation from English to Italian was made by two independent Italian-native, fluent English speakers, experts in the Otorhinolaryngology field. The two translations were analysed and reconciled in a preliminary Italian version by an ENT experts' team to merge concepts, respecting the original meaning. Subsequently, a back-translation from the Italian preliminary version to English was performed by another independent, bilingual translator, unaware of the original SCHNOS questionnaire. The latter version was sent to the senior author who verified that concepts from the original questionnaire were respected and preserved, without any discrepancy in the meaning.

Ten Italian-native rhinoplasty patients were therefore interviewed, during a 15-min consultation, by two authors, who reviewed with the patients each item, taking written notes of eventual ambiguities and comprehension issues, and verified acceptability of the translation. Moreover, patients were asked to verbalize each sentence to assess

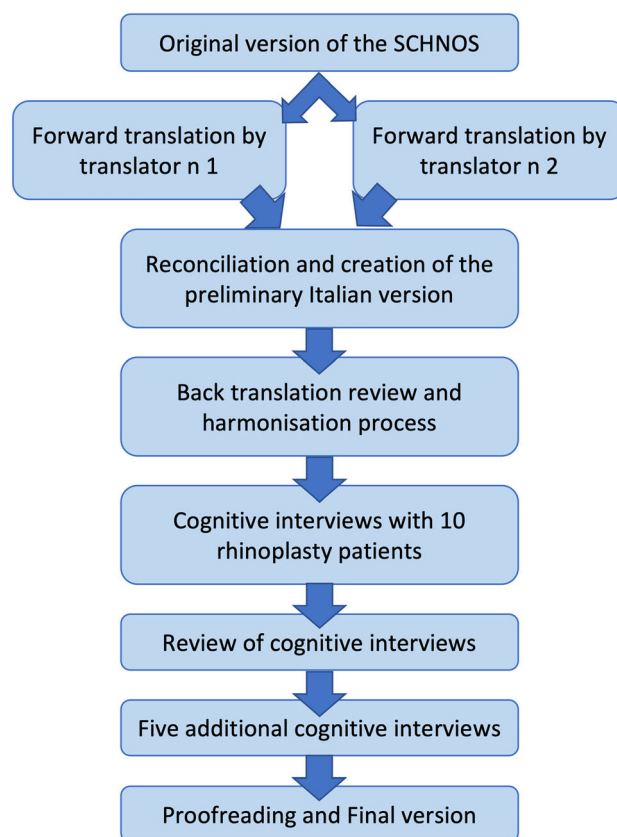


Fig. 1 Translation process according to International guidelines

understandability and outline the eventual necessity of clarification. Cultural adaptation and modifications were made based on the interviews' results. To review the latter version, five additional interviews were conducted. A final version of the Italian SCHNOS was then approved.

Psychometric Validation

A total of 411 consecutive outpatients presenting at the Otorhinolaryngology clinic for the first or follow-up consultations were enrolled, after the explanation of the methods and purpose of the study. Among these, 253 were included in the rhinoplasty group, given their preoperative ($n=92$) or post-operative condition ($n=161$). One-hundred fifty-eight patients, presenting for non-nasal complain (neither nasal deformity nor nasal obstruction), were enrolled in the control group. All individuals were native Italian speakers, literate and above 18 years of age. The population in study was interviewed on general data (gender, age, comorbidities, etc.). Controls' exclusion criteria were any allergic/systemic disease, any previous sinonasal surgery, congenital facial anomaly, nasal pathology detected during physical examination and sleep apnoea/snoring. General exclusion criteria for all individuals were as follows: head/facial trauma within the last 3 months, adenoid hypertrophy, previous neoplastic sinonasal disease and inflammatory/infectious disease during the study period. Patients' characteristics are reported in Table 1. All patients gave their informed consent to participate in the study, and the Italian SCHNOS was administered on the day of consultation.

In order to assess the reproducibility of the obtained scores, 53 patients from the entire cohort (28 rhinoplasty patients and 25 non-rhinoplasty patients) were then enrolled in a "test–retest" group. They were contacted two weeks later by phone calls and asked to answer the questionnaire again, and data were recorded.

Statistical Analysis

The estimates were reported as means, standard deviations (SDs), medians, interquartile ranges (IRQs) and percentages, when appropriate.

Internal Consistency

To measure the internal consistency of the SCHNOS-O and the SCHNOS-C, the Cronbach's alpha was calculated along with a one-sided (lower) 95% confidence limit (95% CL). The $\alpha \geq 0.9$ was considered excellent, ≥ 0.8 was good, ≥ 0.7 was acceptable, ≥ 0.6 was questionable, ≥ 0.5 was poor, and < 0.5 was unacceptable. Several additional alpha-related estimates were reported: item–test

correlations, item–rest correlations, average interitem covariances and alphas with one item removed at a time.

Test–Retest Reliability

To investigate the correlations between repeated measures, the Spearman correlation coefficient was calculated along with 95% confidence interval (95 CI). The correlation coefficient of < 0.19 was considered very weak, 0.20 to 0.39 as weak, 0.40 to 0.59 as moderate, 0.60 to 0.79 as strong and 0.80 to 1.0 as a very strong correlation.

Difference Between Cases and Controls

The two-sample Wilcoxon rank-sum (Mann–Whitney) test was applied to investigate whether the first responses given by patients were significantly different from the first responses given by healthy controls. The significance level of all the two-tailed p -values was set at ≤ 0.05 .

Exploratory Factor Analysis

The exploratory factor analysis (EFA) was conducted on the estimates obtained from all 411 respondents and included both quantitative (unrotated principal factors and parallel analysis) and graphical analyses (scree plot along with a parallel analysis line). The cutoff for retaining was set at eigenvalues ≥ 1.0 (Kaiser rule).

All the analyses were carried out using Stata/IC Statistical Software: Release 16. College Station (StataCorp LP, TX, USA).

Results

Forward and Back-Translation

Differences in the choice of words and syntactic order were depicted in the two independent Italian translations of SCHNOS. The two versions were then reconciled and merged by the authors in a preliminary version, discussing

Table 1 Sample characteristics

	Rhinoplasty	Controls	Total
Gender			
Women	191 (75%)	90 (57%)	281 (32%)
Men	62 (25%)	68 (43%)	130 (68%)
Age, years (SD)	32.6 (11.2)	35.1 (11.4)	33.6 (11.3)
SCHNOS-O, points (SD)	40.7 (29.0)	16.4 (21.3)	31.3 (28.8)
SCHNOS-C, points (SD)	33.0 (30.0)	5.1 (9.9)	22.3 (27.8)

the opportunity of selecting literally translated items versus more commonly used medical syntaxis. Back-translation, although minimal discrepancies, was evaluated as consistent with the original version, keeping intact the meaning of the questionnaire. Forward translations, preliminary version and back-translation with authors' comments are reported in Table 2.

Cognitive Interviews

Ten rhinoplasty patients (mean age 37 ± 11.9) were selected to be equally distributed according to gender (F:M = 1:1) and preoperative (no. 5) and post-operative condition (no. 5), belonging to different socioeconomic and cultural contexts. All patients accepted to participate (a 100% response rate). Cognitive interviews, conducted by two of the authors, highlighted a good overall comprehension of the questionnaire. However, some adjustments were made to simplify the self-administration of the Italian SCHNOS.

Within the introduction, the words “mese” (original: month) and “problema” (original: problem) were underlined in order to focus the patient's attention on them, as reported in the updated version of the original SCHNOS [8]. In fact, 4 over 10 patients asked the authors whether the questions were related to the current condition, and these were interpreted as inattention's mistakes. On the other hand, 2 patients required a revision of a given score during the questionnaire since they did not focus on the “negative impact” of the item, as explicated by the use of “problem”, on the answer.

Two patients asked for clarifications on item no.3, particularly referred to a slight overlap with item no. 1, so authors decided to add in the final version of the Italian SCHNOS “sintomi infiammatori” in brackets (literally: inflammatory symptoms) to sentence no. 3, to better focus patient's attention on nasal congestive state.

Some patients pointed out redundancy and overlapping of items nos. 9 and 10. According to the original version, the authors decided to keep both items but better specify the ninth one adding in brackets “considerando le proporzioni” (literally: considering the proportion).

The most challenging item was the no. 7, as many patients were very confused about its meaning, at least before reading item no. 8. Although the optimal results obtained in back-translation (Table 2), Italian speakers usually use “naso dritto” (literally: straight nose) to describe both the frontal and the profile projection. Consequently, five out of ten patients enrolled in the cognitive interviews hardly understood the meaning of straightness, referring the assigned score to the straightness of the nose on the profile view, usually affects by humps' presence. For this reason, the authors agreed on adding in brackets

“in asse sul piano frontale” in the final version (literally: in axis on the frontal view) to specify the point of view.

The final version of the Italian SCHNOS, was further administered to 5 rhinoplasty patients, who did not detect these previously identified issues (Fig. 2).

Sample Characteristics

Of the 411 respondents, 281 (32%) were women (Table 1). The average age was 33.6 (11.3) years. The average SCHNOS-O score was 31.3 (28.8) points, and the SCHNOS-C was 22.3 (27.8) points.

Psychometric Validation

Reliability

The Cronbach's alpha was excellent for both the SCHNOS-O (0.90, 95% CL 0.88) and the SCHNOS-C (0.94, 95% CL 0.94) scores (Table 3). For the entire SCHNOS, the alpha was 0.93 (95% CL 0.92). All the items demonstrated good or acceptable item–test and item–rest correlations. Also, excluding one item at a time did not substantially improve alpha for either the SCHNOS-O or the SCHNOS-C.

All the correlations between repeated measures were moderate to very strong (Table 4). For all the items as well as for the SCHNOS-O and the SCHNOS-C scores, there were significant differences between cases and controls with $p < 0.0001$ (Mann–Whitney U test).

Validity

The exploratory factor analysis demonstrated unidimensionality of both the SCHNOS-O and the SCHNOS-C scores. For the SCHNOS-O, the single factor retained with eigenvalue 2.68 (Tables 5 and 6 and Fig. 3). Respectively, for the SCHNOS-C, a single factor exceeded the cutoff level with eigenvalue 4.47.

Discussion

The original version of the SCHNOS was successfully translated adapted and validated into Italian. This study resulted in a coherent and reliable Italian version of the original questionnaire. Based on the international guidelines, we meticulously followed the multistep process of forward translation, back-translation and cognitive interviewing deemed necessary to obtain a valid clinical instrument. In this study, given their paramount importance, respect for the original conception and syntaxis, and adaptation to an Italian targeted population were achieved.

Table 2 Reconciliation of forward translations and evaluation of back-translation.

Item no.	Original version (English)	Forward translation n. 1	Forward translation n. 2	Preliminary version	Back-translation	Rationale and comments
1	Over the past month, how much of a problem was the following:	Nel corso dell'ultimo mese, quanto hanno rappresentato un problema le seguenti condizioni:	Nell'ultimo mese, quanto ritieni che ciascuno dei seguenti sia stato un problema	Nell'ultimo mese, quanto ritieni che ciascuno dei seguenti sia stato un problema:	During the past month, how would you judge each of the following considerations:	Authors decided for the literally translation n.2 of the question since it seems easier to understand.
	No Problem		Nessun problema	Nessun problema	No problem	Back-translation was given in a more complex form; however, it kept the meaning intact
	Extreme problem	Nessun problema Problema grave	Problema grave	Problema grave	Serious problem	
1	Having a blocked or obstructed nose	Avere il naso ostruito o chiuso	Ostruzione respiratoria nasale	Avere il naso ostruito o chiuso	Having an obstructed or blocked nose	Authors chose the first direct translation since n.2 describes only the “condition” (literally means “nasal obstruction”). Syntaxis was inverted in both forward and back-translation because “ostruito” is much more common than “chiuso” in Italian referred to the nose.
2	Getting air through my nose during exercise	Respirare attraverso il naso durante l'esercizio fisico	Passaggio di aria attraverso il naso durante l'attività fisica	Respirare attraverso il naso durante l'attività fisica	Breathing through my nose during physical activity	Authors found more appropriate the first translation construct; however, “attività” was selected instead of “esercizio” due to a more common use in Italian. Back-translation used synonyms.
3	Having a congested nose	Soffrire di congestione nasale	Avere il naso congesto	Soffrire di congestione nasale	Suffering from nasal congestion	A less direct translation was selected (no. 1), and this affected the back-translation. However, authors judged this version more popular among Italian speakers
4	Breathing through my nose during sleep	Respirare attraverso il naso durante il sonno	Respirazione nasale durante il sonno	Respirare attraverso il naso durante il sonno	Breathing through my nose while sleeping	Authors selected translation n 1 since the second one omitted the verb, transforming it in a noun. Back-translation respected the meaning.
5	Decreased mood and self-esteem due to my nose	Umore depresso e diminuzione dell'autostima a causa del mio naso	Riduzione del tono dell'umore e dell'autostima a causa del mio naso	Peggioramento dell'umore e dell'autostima a causa del mio naso	Deterioration of mood and self-esteem caused by my nose	Authors decided for a direct translation (no. 2), just replacing the first word due to the more widespread use of this Italian locution. Back-translation respected the original meaning.
6	The shape of my nasal tip	La forma della mia punta nasale	La forma della mia punta nasale	La forma della mia punta nasale	The shape of the tip of my nose	The two Italian translations and back-translation were the same.
7	The straightness of my nose	Quanto è dritto il mio naso	L'asse del mio naso	Quanto è dritto il mio naso	The straightness of my nose	Authors discussed that in Italian the most common phrase to define nasal straightness was the first one. This was confirmed by back-translation results.

8	The shape of my nose from the side	La forma del mio naso nel profilo	La forma del mio naso da un lato	La forma del mio naso di profilo	The profile of my nose	Although translation no. 2 was literal, the word “profilo” is way more popular among Italians, so the first translation was chosen. This affected back-translation
9	How well my nose suits my face	Come il mio naso si armonizza con il mio volto	Come il mio naso si adatta al viso	Come il mio naso è in armonia con il viso	Whether my nose is in harmony with the rest of my face	Authors preferred the use of “harmony concept” instead of “to suit” since literal Italian translation used in no. 2 “adatta” has an “adaptation” meaning. This choice affected back-translation; however, results were considered good by all authors.
10	The overall symmetry of my nose	La simmetria complessiva del mio naso	La simmetria complessiva del mio naso	La simmetria complessiva del mio naso	The overall symmetry of my nose	The two Italian translations and back-translation were exactly the same.

The Italian SCHNOS showed to be a reliable tool, given the high internal consistency in both obstructive and cosmetic domains, with excellent values of Cronbach’s alpha, being very similar to the original version [6]. According to the other versions of SCHNOS [6, 11], all the items were deemed essential to the considerable consistency of the Italian translation. The validity of this version has been proved by the positive and significant correlation of items

and the unidimensionality of each domain. Moreover, the scale exhibited good discrimination between rhinoplasty and non-rhinoplasty patients, as generally requested for PROMs. The results obtained in the test–retest phase demonstrated the high reproducibility of this instrument, in line with the other translations of the questionnaire. In fact, the participants included in this group answered in a

Nell’ultimo <u>mese</u> , quanto ritieni che ciascuno dei seguenti sia stato un <u>problema</u> :		
SCHNOS-O	1. Avere il naso ostruito o chiuso	da 0 a 5 punti
	2. Respirare attraverso il naso durante l’attività fisica	da 0 a 5 punti
	3. Soffrire di congestione nasale (sintomi infiammatori)	da 0 a 5 punti
	4. Respirare attraverso il naso durante il sonno	da 0 a 5 punti
Punteggio SCHNOS-O = (Σ punteggi/ 20) x 100 Massimo 100 punti		
SCHNOS-C	5. Peggioramento dell’umore e dell’autostima a causa del mio naso	da 0 a 5 punti
	6. La forma della mia punta nasale	da 0 a 5 punti
	7. Quanto è dritto il mio naso (in asse sul piano frontale)	da 0 a 5 punti
	8. La forma del mio naso di profilo	da 0 a 5 punti
	9. Come il mio naso è in armonia con il viso (considerando le proporzioni)	da 0 a 5 punti
	10. La simmetria complessiva del mio naso	da 0 a 5 punti
Punteggio SCHNOS-C = (Σ punteggi/ 30) x 100 Massimo 100 punti		

Over the past <u>month</u> , how much of a <u>problem</u> was the following: :		
SCHNOS-O	1. Having a blocked or obstructed nose	0 to 5 points
	2. Getting air through my nose during exercise	0 to 5 points
	3. Having a congested nose	0 to 5 points
	4. Breathing through my nose during sleep	0 to 5 points
SCHNOS-O score = (Σ scores/ 20) x 100 Maximum 100 points		
SCHNOS-C	5. Decreased mood and self- esteem due to my nose	0 to 5 points
	6. The shape of my nasal tip	0 to 5 points
	7. The straightness of my nose	0 to 5 points
	8. The shape of my nose from the side	0 to 5 points
	9. How well my nose suits my face	0 to 5 points
	10. The overall symmetry of my nose	0 to 5 points
SCHNOS-C score = (Σ scores/ 30) x 100 Maximum 100 points		

Fig. 2 Structures and scoring formulas of English and Italian versions of SCHNOS

Table 3 Internal consistency of the SCHNOS.

Item	<i>n</i>	Sign	Item–test correlation	Item–rest correlation	Average interitem covariance	Alpha
SCHNOS-O items in model						
Item 1	411	+	0.90	0.82	1.76	0.85
Item 2	411	+	0.87	0.76	1.88	0.87
Item 3	411	+	0.84	0.73	2.03	0.88
Item 4	411	+	0.88	0.78	1.78	0.86
SCHNOS-O					1.86	0.90
SCHNOS-C items in model						
Item 5	411	+	0.88	0.83	1.84	0.93
Item 6	411	+	0.87	0.81	1.89	0.94
Item 7	411	+	0.84	0.77	1.93	0.94
Item 8	411	+	0.90	0.84	1.73	0.93
Item 9	411	+	0.92	0.88	1.76	0.93
Item 10	411	+	0.91	0.87	1.81	0.93
SCHNOS-C					1.83	0.94
All 10 items in model						
Item 1	411	+	0.75	0.69	1.47	0.92
Item 2	411	+	0.75	0.68	1.48	0.93
Item 3	411	+	0.67	0.59	1.54	0.93
Item 4	411	+	0.75	0.68	1.46	0.92
Item 5	411	+	0.82	0.77	1.46	0.92
Item 6	411	+	0.78	0.72	1.49	0.92
Item 7	411	+	0.80	0.75	1.48	0.92
Item 8	411	+	0.83	0.77	1.41	0.92
Item 9	411	+	0.85	0.81	1.42	0.92
Item 10	411	+	0.85	0.81	1.44	0.92
Entire test scale					1.46	0.93

Table 4 Test–retest validity of the SCHNOS

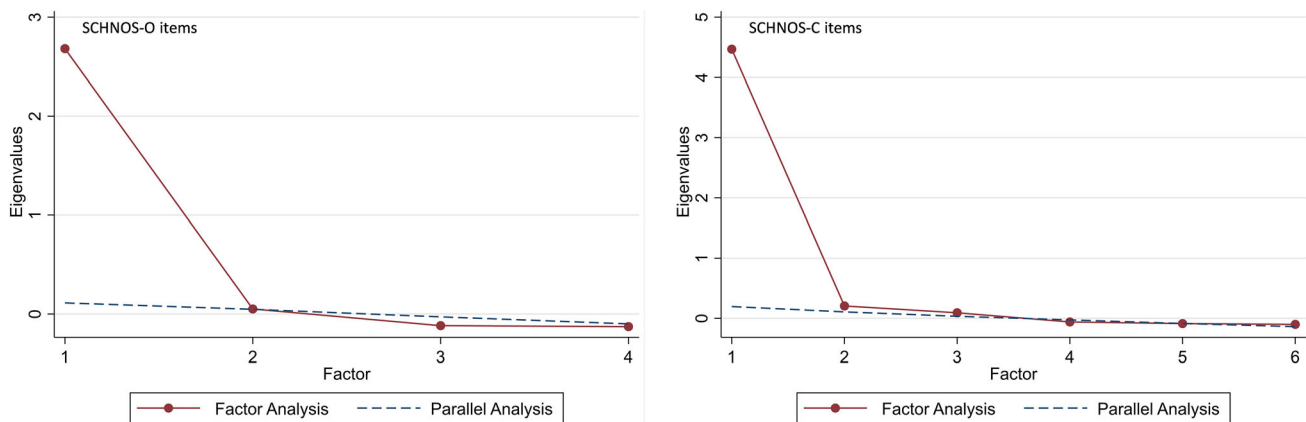
	Spearman correlation coefficient	95% CI	
Item 1	0.82	0.71	0.90
Item 2	0.72	0.55	0.83
Item 3	0.80	0.68	0.88
Item 4	0.73	0.57	0.83
Item 5	0.54	0.31	0.70
Item 6	0.59	0.38	0.74
Item 7	0.43	0.19	0.63
Item 8	0.61	0.41	0.76
Item 9	0.49	0.26	0.68
Item 10	0.62	0.42	0.76
SCHNOS-O	0.86	0.78	0.92
SCHNOS-C	0.71	0.55	0.82

Table 5 Exploratory factor analysis—item loadings

Items	Factor 1	Uniqueness
SCHNOS-O		
Item 1	0.87	0.25
Item 2	0.80	0.35
Item 3	0.78	0.39
Item 4	0.82	0.32
SCHNOS-C		
Item 5	0.85	0.27
Item 6	0.83	0.31
Item 7	0.81	0.34
Item 8	0.87	0.24
Item 9	0.90	0.18
Item 10	0.90	0.19

Table 6 Parallel analysis

Factors	Eigenvalues	Eigenvalues averaged over 10 replications	Difference
SCHNOS-O			
1	2.68	0.12	2.56
2	0.05	0.03	0.02
3	−0.12	−0.02	−0.10
4	−0.13	−0.10	−0.03
SCHNOS-C			
1	4.47	0.18	4.29
2	0.21	0.11	0.10
3	0.09	0.04	0.05
4	−0.06	−0.03	−0.03
5	−0.09	−0.07	−0.02
6	−0.10	−0.15	0.05

**Fig. 3** Scree plot of exploratory factor analysis of the SCHNOS-O and the SCHNOS-C

positively correlated manner in the 2-week interval for both the obstructive domain and cosmetic domain.

These data suggest a promising role of the Italian SCHNOS even in comparative analysis of pre- and post-surgical conditions, as already done for English speakers [8]. Moreover, the possibility of self-administration and the good understandability of the scale permits eventual on-demand data collection through online survey dissemination, as already experienced by authors [15], even in non-clinical settings. Therefore, this scale allows a more regular follow-up and outcomes reports after surgery.

Different gender distributions in the rhinoplasty and non-rhinoplasty patients may affect the generalization of our results. In fact, larger proportions of women were included in the rhinoplasty group compared to controls. This could be explained by the consecutiveness of our recruitment process. Moreover, in our experience, cosmetic rhinoplasty is usually more requested among the female Italian population. A recent review has highlighted that

women generally have inferior Patient-reported outcomes related to satisfaction after medical or surgical treatment [16]. Further studies may investigate whether gender should affect SCHNOS results. However, the great strength of this study is given by the large sample in the psychometric validation phase, compared to smaller cohorts included in previous translations of the SCHNOS. In this perspective, the Italian translation of SCHNOS represents a good, standardized instrument for rhinoplasty surgeons not only for a clinical purpose but also indispensable to share and compare personal results in scientific publications.

Conclusions

We successfully generated an Italian version of the SCHNOS questionnaire, which is a valid and reliable instrument to evaluate obstructive and cosmetic outcomes in rhinoplasty patients. We hope that this will provide an

additional tool for the clinician in the evaluation of Italian-speaking rhinoplasty patients.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval The present study protocol was approved by the Institutional Review Board (Protocol number: Rhinoplasty2020; decision number: 38/INT/2020).

Human or Animal participants All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all participants.

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