

Spanish Translation, Cultural Adaptation, and Validation of the Standardized Cosmesis and Health Nasal Outcomes Survey Questionnaire

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Background: The Standardized Cosmesis and Health Nasal Outcomes Survey (SCHNOS) questionnaire is a new instrument that was developed to evaluate both functional and cosmetic components of rhinoplasty. It is a reliable, consistent, and validated patient-reported outcome measure that is not available in Spanish.

Methods: The SCHNOS questionnaire was forward translated, back translated, and culturally adapted following international guidelines. Its psychometric validity was tested with native Spanish speakers in 2 centers in Colombia. The authors measured internal consistency, correlation, and reproducibility to determine validity of the instrument.

Results: The final Spanish version of the SCHNOS was administered to 76 native Spanish speakers. Both the SCHNOS-O (obstructive domain) and SCHNOS-C (cosmetic domain) showed a high internal consistency with Cronbach's alpha of 0.84 and 0.94, respectively. The Spearman correlations between the items of SCHNOS-O (0.38–0.82) and SCHNOS-C (0.49–0.88) were positive and significant. Spearman's rank correlation in the test–retest analysis for SCHNOS-O ($r = 0.87$) and SCHNOS-C ($r = .90$) was positive and statistically significant. There was statistical significance in responses obtained for SCHNOS-O ($P < 0.001$) but not for SCHNOS-C ($P = 0.222$).

Conclusions: In this study, the SCHNOS was successfully translated and culturally adapted into Spanish. The Spanish version of the SCHNOS was shown to be a reliable and valid instrument that we recommend it should be used in Spanish-speaking patients who are having functional or cosmetic rhinoplasty. (*Plast Reconstr Surg Glob Open* 2019;7:e2153; doi: 10.1097/GOX.0000000000002153; Published online 26 March 2019.)

INTRODUCTION

Rhinoplasty is one of the most common procedures in facial plastic surgery and otolaryngology.¹ It is a procedure in which the shape and function of the nose

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change, whether it is done for cosmetic or functional indications.¹ Because nasal function and cosmesis are closely related, cosmetic nasal surgery can have functional consequences, and vice versa.² There are many available validated patient-reported outcome measures that quantify either cosmetic or functional results; however, there are few instruments that evaluate both results concomitantly. The Standardized Cosmesis and Health Nasal Outcomes Survey (SCHNOS) questionnaire is an instrument that was developed to evaluate both functional and cosmetic components of rhinoplasty. It is a reliable, consistent, and validated patient-reported outcome measure.^{2,3}

There is currently no available translation to Spanish of the SCHNOS questionnaire. Spanish is the second most spoken language in the world,⁴ English being third. It is the official language in 21 countries, and it is one of the official United Nations languages.⁵ Four thousand eighty million people in the world are native Spanish speakers, and 572 million people speak Spanish.⁴

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To ensure semantic and conceptual equivalence, it is recommended^{6,7} for patient-reported outcome measures to be socioculturally adapted when administered in a population with a different language and culture. This procedure not only allows for the evaluation of patients within their own cultural context but also produces standardized instruments for comparisons among international groups of individuals.⁷

The aim of this study was to carry out the translation and cultural adaptation of the SCHNOS questionnaire into Spanish. The questionnaire was then validated with functional and/or cosmetic rhinoplasty patients in a Spanish-speaking population in Colombia, South America.

METHODS

The translation and cultural adaptation process of the SCHNOS¹ was conducted with respect of the International Society for Pharmacoeconomics and Outcomes Research guidelines (Fig. 1).⁶ This prospective validation study was conducted in 2 phases. In the first phase, the questionnaire was first translated, and cross-cultural adaptation was carried out. The second phase consisted of the psychometric validation of the questionnaire in a population of Spanish-speaking rhinoplasty patients in 2 centers in the cities of Bogota and Cali in Colombia. Ethics Committees of both centers approved the protocol. Informed written consent was obtained from all participants.

Questionnaire Description

The SCHNOS¹ is a 10-item self-rated assessment questionnaire that includes a cosmetic component (domain) of 4 items in addition to an obstruction component of 6 items that the patient answers using a Likert-like 0–5 scale (“no problem” to “extreme problem”). It produces 2 scores, 1 for each domain, with a maximum score of a 100. Figure 2 shows the structures and scoring of the English and Spanish versions of SCHNOS.

Translation Process

Forward Translation and Back Translation

Two independent bilingual translators, both native Spanish speakers, translated the SCHNOS questionnaire from English to Spanish. After this, 2 independent bilingual translators native in English translated the Spanish-translated questionnaires into English again. The first author assessed these 4 translations to ensure context and sense. After this, the team of the Otolaryngology Division of the Bogota Center reconciled and merged the 2 initial Spanish versions of each questionnaire into a preliminary Spanish version. The team ensured that the initial concepts were respected and identified discrepancies with the original questionnaires.

Then, a new independent bilingual translator native speaker of English back translated the preliminary version of the questionnaire to ensure that the content had not been lost. This English version was sent to the senior author who verified it against the original questionnaire (Fig. 1).

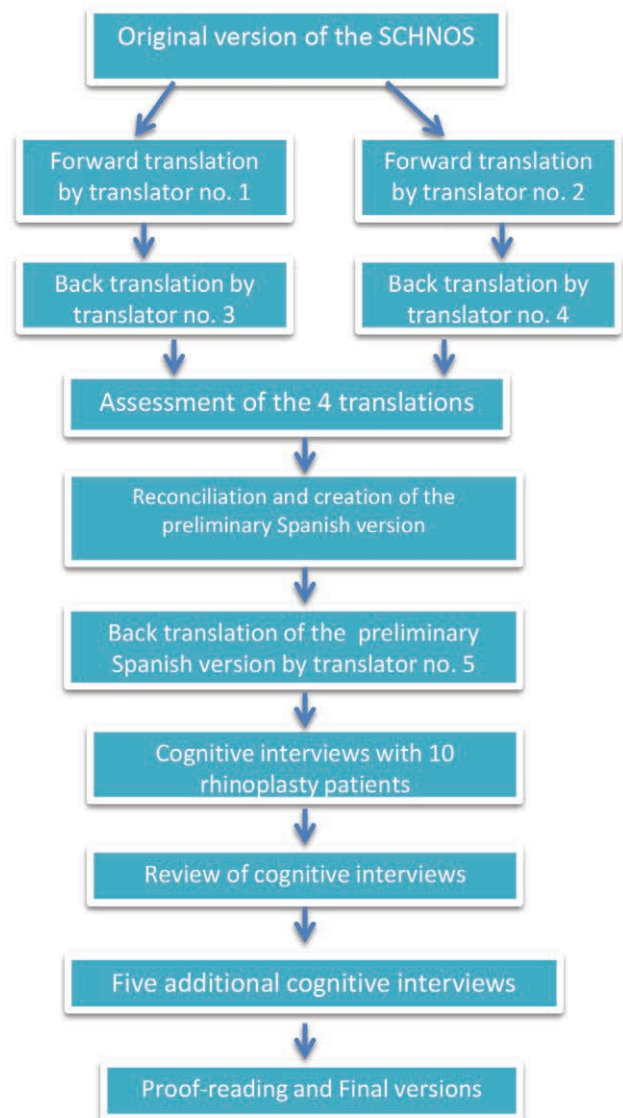


Fig. 1. Translation process of the SCHNOS.

Cognitive Interviews

Thereafter, 15-minute interviews were conducted with 10 rhinoplasty patients who were native Spanish speakers. During those interviews, the first author, a native Spanish speaker and fluent in English, reviewed each questionnaire with the patients to identify ambiguities and to verify its comprehension and acceptability. The patients were asked to verbalize their perception of each item. Recorded notes were taken during the interviews to compile the answers. The data gathered were reviewed, and modifications were made to the translated version. The otolaryngology team agreed with the result and reviewed the finalized translated version again. A final proofreading was carried out, and a final version of the questionnaire was elaborated.

Patient Recruitment

The final Spanish version of the SCHNOS (Table 1) was administered prospectively to 38 adult rhinoplasty pa-

| | | |
|--|--|---------------|
| Obstruction domain SCHNOS-O | 1. Having a blocked or obstructed nose / <i>Tener la nariz tapada u obstruida</i> | 0 to 5 points |
| | 2. Getting air through my nose during exercise / <i>Respirar por mi nariz mientras hago ejercicio</i> | 0 to 5 points |
| | 3. Having a congested nose / <i>Tener la nariz congestionada</i> | 0 to 5 points |
| | 4. Breathing through my nose during sleep / <i>Respirar por mi nariz mientras duermo</i> | 0 to 5 points |
| SCHNOS-O score = $0 (\sum \text{item scores} / 20) \times 100$ Maximum 100 points | | |
| Cosmesis domain SCHNOS-C | 5. Decreased mood and self-esteem due to my nose / <i>Baja de ánimo o sentirse inseguro por mi nariz</i> | 0 to 5 points |
| | 6. The shape of my nasal tip / <i>La forma de la punta de mi nariz</i> | 0 to 5 points |
| | 7. The straightness of my nose / <i>Lo torcida/desviada que está mi nariz</i> | 0 to 5 points |
| | 8. The shape of my nose from the side / <i>La forma de mi nariz vista de lado (perfil)</i> | 0 to 5 points |
| | 9. How well my nose suits my face / <i>Como se ve mi nariz con el resto de mi cara</i> | 0 to 5 points |
| | 10. The overall symmetry of my nose / <i>La simetría general de mi nariz</i> | 0 to 5 points |
| SCHNOS-C score = $0 (\sum \text{item scores} / 30) \times 100$ Maximum 100 points | | |

Fig. 2. The structures and scoring formulas of the English and Spanish version of the SCHNOS.

tients and 38 controls. Patients were recruited in Hospital Universitario Fundación Santa Fe de Bogota in Bogota and in Centro Medico Imbanaco in Cali, Colombia. Exclusion criteria included craniofacial syndromes, primary or secondary septal perforation, radiation to the head and neck, connective tissue diseases, acute or chronic rhinosinusitis, noncontrolled asthma, nasal sinus malignancies or benign tumors, noncontrolled allergic rhinitis, concurrent endoscopic sinus surgery, and inability to understand written or spoken Spanish. The control group consisted of adult patients presenting for a chief complaint that was neither nasal deformity nor nasal obstruction (eg, vertigo, deafness, tinnitus, reflux). Written consent was obtained, and each questionnaire was filled out on the day of consultation.

A group of 40 patients of the initial group were enrolled in a test-retest group, 20 rhinoplasty patients and 20 controls who were contacted by phone 2 weeks later to complete the questionnaire again.

Psychometric Validation and Statistical Analysis

We measured the internal consistency of the Spanish version of SCHNOS-obstruction domain (SCHNOS-O) and SCHNOS-cosmetic domain (SCHNOS-C) with Cronbach’s alpha, which was calculated along with a 1-sided 95% CL. Results of Cronbach’s alpha ≥ 0.9 were considered excellent; $0.9 > \alpha \geq 0.8$, good; $0.8 > \alpha \geq 0.7$, acceptable; $0.7 > \alpha \geq 0.6$, questionable; $0.6 > \alpha \geq 0.5$, poor; and < 0.5 , unacceptable.

We also determined the correlations between the items included in the Spanish version of the SCHNOS-O and the SCHNOS-C scales, with a Spearman correlation coefficient, which was obtained along with a 2-tailed P value. P values ≤ 0.05 were considered significant. All the analyses were carried out using Stata/IC Statistical Software: Release 14 (StataCorp LP, College Station, Tex.).

To measure the reproducibility of the questionnaire, we carried a test-retest in 40 patients, and we calculated a Spearman’s rank correlation and a Wilcoxon signed-rank test for matched pairs (P values) to compare the mean scores obtained for the SCHNOS-O and the SCHNOS-C during the 2-week interval.

RESULTS

Translation Process

Forward and Back Translations

There were differences between the 2 forward translations, which were reconciled and optimized by the authors. Table 2 shows examples of this step. The back translation showed minimal discrepancies with the original concepts. No further modifications were needed at that point.

Cognitive Interviews

Ten interviews conducted were obtained with 10 pre-operative rhinoplasty patients. Of those, 50% were women, and 50% were men. Mean age was 28.7 years. Of the 10 patients who were invited to participate in the interviews, the 10 accepted. No consensus exists on the amount of cognitive interviews that should be conducted.¹ The number of interviews was decided based on when it no longer brought us new information.

Three modifications were made to the translated version of the SCHNOS questionnaire after the cognitive interviews. The part of the sentence “mes pasado” in the introduction was underlined, as 5 of the patients did not understand that they should answer according to the past month and understood it as the recent months or years. Highlighting this word puts the emphasis on the singularity of the sentence. The sentence “rectitud de mi nariz” in item 7 was changed to “lo torcida/desviada que está mi nariz” as 3 of the patients had a hard time understanding what we meant with the word “rectitud.” The proper translation of the word straightness to Spanish is

Table 1. SCHNOS (Spanish Version)

| Durante el mes pasado, que tanto fue un problema para usted lo siguiente: Por favor marque con una X solo una opción | | | | | | |
|---|-----------------|---|---|---|---|------------------|
| | Ningún problema | | | | | Problema Extremo |
| 1. Tener la nariz tapada u obstruida | 0 | 1 | 2 | 3 | 4 | 5 |
| 2. Respirar por mi nariz mientras hago ejercicio | 0 | 1 | 2 | 3 | 4 | 5 |
| 3. Tener la nariz congestionada | 0 | 1 | 2 | 3 | 4 | 5 |
| 4. Respirar por mi nariz mientras duermo | 0 | 1 | 2 | 3 | 4 | 5 |
| 5. Baja de ánimo o sentirse inseguro por mi nariz | 0 | 1 | 2 | 3 | 4 | 5 |
| 6. La forma de la punta de mi nariz | 0 | 1 | 2 | 3 | 4 | 5 |
| 7. Lo torcida/desviada que está mi nariz | 0 | 1 | 2 | 3 | 4 | 5 |
| 8. La forma de mi nariz vista de lado (perfil) | 0 | 1 | 2 | 3 | 4 | 5 |
| 9. Como se ve mi nariz con el resto de mi cara | 0 | 1 | 2 | 3 | 4 | 5 |
| 10. La simetría general de mi nariz | 0 | 1 | 2 | 3 | 4 | 5 |

Table 2. Reconciliation of Forward Translations

| Item No. | Original Version (English) | Forward Translation No. 1 | Forward Translation No. 2 | Preliminary Version | Rationale |
|----------|---|---|--|--|--|
| 1 | Having a blocked or obstructed nose | Tener la nariz bloqueada o obstruida | Tener la nariz bloqueada u obstruida | Tener la nariz tapada u obstruida | Even though the two translation were the same, researchers changed the word “tapada” for “bloqueada” as these two words have the same meaning and the last one is not a word that is familiar to patients when they talk about obstruction of their nose |
| 2 | Getting air through my nose during exercise | Respirar por mi nariz mientras hago ejercicio | Obtener aire a través de mi nariz cuando hago ejercicio | Respirar por mi nariz mientras hago ejercicio | Researchers chose the first translation, as it is more accurate in relation to meaning of the statement. The sentence “obtener aire a través de mis nariz” (direct translation of getting air through my nose) is a way of saying “respirar” (breathe) and this second one is more understandable |
| 3 | Having a congested nose | Tener la nariz tapada o congestionada | Tener la nariz congestionada | Tener la nariz congestionada | Researchers chose the last translation as it was more accurate to the initial statement |
| 5 | Decreased mood and self-esteem due to my nose | Estar deprimida o sentirme inseguro por mi nariz | Baja de ánimo y de autoestima relacionada con mi nariz | Baja de ánimo o sentirse inseguro por mi nariz | Researchers discussed both translations and merged the first part from the second translation with the second part of the first translation, as doing so was more accurate with the initial statement |
| 7 | The straightness of my nose | ¿Que tan recta es mi nariz? | La forma de la línea de mi nariz (percepción de mi nariz como torcida) | La rectitud de mi nariz | The first translation was accurate but was changed into a question by the translator. The second translation changed the sense of the statement as it placed it in a negative way. Researchers decided to modify the first translation as a statement and not question and that changed the word “recta” to “rectitude” for the sentence to make sense |
| 8 | The shape of my nose from the side | La forma de mi nariz al verla de perfil | La forma de mi nariz vista de lado | La forma de mi nariz vista de lado (perfil) | Researchers discussed that in Spanish, the first translation would be clearer to patients as it included the word “perfil” (profile) that would help patients understand better the sense of the statement and for that reason merged both translations |
| 9 | How well my nose suits my face | Lo bien que mi nariz va con el resto de mi rostro | Como se ve mi nariz en mi cara | Como se ve mi nariz con el resto de mi cara | Researchers discussed that in Spanish, the most accurate way of describing the statement would be to merge both translations |

“rectitud,” but in Spanish, this word means to be ethical proper and not physical straightness. When we asked the 10 patients how would they replace this word, they suggested the word “torcida” (which is a very typical Colombian slang word) and “desviada.” Because of this, we presented this finding to the research team and decided to leave both words separated by a “/” sign. The third modification was that we included a preliminary sen-

tence explaining to the patient that only one item could be marked, as some patients had doubts whether they could mark more than 1 item. Two patients reported that they thought that question 9 was redundant. Because our aim was not to modify the questionnaire, we kept item number 9. These 2 modifications were presented to 5 additional preoperative rhinoplasty patients, comprised of 3 women and 2 men.

Table 3. Characteristics of the Participants

| Characteristics | Patients (n = 38) | Controls (n = 38) |
|------------------------------|-------------------|-------------------|
| Sex | | |
| Female | 27 | 23 |
| Male | 11 | 15 |
| Mean age; 36.7 (SD: 14.7), y | 35.3 | 34.2 |
| Consultation | | |
| Preoperative rhinoplasty | 24 | 0 |
| Postoperative rhinoplasty | 14 | 0 |
| Sleep apnea | 0 | 5 |
| Pharyngitis/tonsillitis | 0 | 6 |
| Reflux | 0 | 1 |
| Ear cerumen | 0 | 4 |
| Vertigo | 0 | 1 |
| Hearing loss | 0 | 1 |
| External otitis | 0 | 2 |
| Other* | 0 | 18 |

*Other diagnoses that are not part of the exclusion criteria.

Psychometric Validation

Of the 76 patients invited to fill out the initial questionnaire, 36 were recruited in the Bogota center and 40 in the Cali center. No patient refused to participate in the study.

The distribution between the groups is shown in Table 3.

Both the SCHNOS-O and SCHNOS-C showed a high internal consistency with Cronbach’s alpha 0.84 for the functional factor (95% inferior CL: 0.77) and 0.94 for the cosmetic factor (95% inferior CL: 0.92).

The Spearman correlations between the items of the obstruction domain were positive and significant, though they varied widely from 0.38 (between items 1 and 4), 0.73 (between items 1 and 2), to 0.82 (between items 1 and 3) (Table 4). The correlations between the items of the cosmetic domain were positive and statistically significant. They were less variable from weak [0.49 (between items 5 and 7), 0.75 (between items 7 and 8), 0.76 (between items 5 and 6)] to very strong [0.85 (between items 6 and 9) and 0.88 (between items 9 and 10)].

In the test–retest group for patients and controls, the Spearman’s rank correlations for the obstructive domain and cosmetic domain were positive and statistically significant: obstructive, $r = 0.87$, on 40 observations (95% CI: 0.773–0.932); cosmetic, $r = 0.90$, on 40 observations (95% CI: 0.826–0.949). There was statistical significance in responses obtained in the Wilcoxon signed-rank test for the

Table 4. Spearman Correlation Between the Items Included in the SCHNOS

| SCHNOS-O items | 1 | 2 | 3 | 4 | | |
|----------------|-------|-------|-------|-------|-------|----|
| 1 | 1 | | | | | |
| 2 | 0.73* | 1 | | | | |
| 3 | 0.82* | 0.73* | 1 | | | |
| 4 | 0.38* | 0.64* | 0.51* | 1 | | |
| SCHNOS-C items | 5 | 6 | 7 | 8 | 9 | 10 |
| 5 | 1 | | | | | |
| 6 | 0.76* | 1 | | | | |
| 7 | 0.49* | 0.57* | 1 | | | |
| 8 | 0.62* | 0.74* | 0.75* | 1 | | |
| 9 | 0.69* | 0.85* | 0.67* | 0.83* | 1 | |
| 10 | 0.70* | 0.84* | 0.68* | 0.85* | 0.88* | 1 |

$P < 0.01$.

*SCHNOS-C and SCHNOS-O.

obstructive domain ($P < 0.001$). There was no significant difference for the cosmetic domain ($P = 0.222$).

DISCUSSION

In this study, we were able to translate, culturally adapt, and validate a Spanish version of the SCHNOS questionnaire in native Spanish-speaking patients in Colombia. This Spanish version was shown to be conceptually and psychometrically equivalent to the original English version. We followed a meticulous process of translation, which included a forward translation, back translation, and cognitive interviewing that is supported by international guidelines.^{6,7} This multistep procedure is of paramount importance not only to achieve semantic equivalence but also to ensure that the original content and concepts are respected and adapted to the population that the instrument targets. Also, we carried a 2-centered study where we were able to validate the questionnaire in 2 different cities. In Colombia, like many other countries, there are slight differences in the terms and words of Spanish between one region and another. This is also true for Spanish worldwide. Achieving validation in both cities suggests that this patient-reported outcome measure may be applicable in other Spanish-speaking regions.

The Spanish version of the SCHNOS questionnaire is a reliable instrument, as demonstrated by a high internal consistency for both the obstructive domain and the cosmetic domain. These results are very similar to the Cronbach’s alpha of the original English version.¹ It is also a valid instrument, which refers to its ability to measure accurately the outcome of interest. Multiple analyses are required to prove validity.⁸ The positive and significant correlation between each item of the SCHNOS-O and the SCHNOS-C shows validity of the Spanish version. The methodology used for the translation process is also a safeguard of content validity.

In the test–retest phase of the study, we demonstrated the reproducibility of our instrument. The participants of this group of the study answered in a positively correlated manner in the 2-week interval for both the obstructive domain and cosmetic domain. Furthermore, for the cosmetic domain, their answers were not significantly different in the 2-week interval, which highlights the proper reproducibility of our instrument. There was a significant difference for the obstructive domain in the Wilcoxon signed-rank test. We think that this difference can be explained because of normal nasal cycle, where the patient can feel that breaths better depending on what part of the cycle he/she is but specially because there could be participant expectation bias, where the patient feels better by visiting the specialist. Finally, patients might tend to regress to the mean in the recall survey, attempting to choose more “common” answers.

The small number of participants recruited for the psychometric validation is a limitation to this study. However, many similar translation studies achieved a validation process with similar or a more limited number of participants.^{9–11} Our results showed significantly the reliability and validity of the Spanish SCHNOS in our group

of patients; we believe that the associations would only be stronger with a larger sample size.

To our knowledge, this study is the first one to generate a Spanish-language version of the SCHNOS questionnaire. Such adapted questionnaires are important in health-related quality of life evaluation. They are useful not only for screening and monitoring the individual patient and in the evaluation of health outcomes¹⁴ but also for providing comparable results for international research.⁷

CONCLUSIONS

In conclusion, we successfully generated a Spanish version of the SCHNOS questionnaire, which is a valid and reliable instrument to evaluate both the functional and cosmetic components of rhinoplasty. We hope that this will provide an additional tool for the clinician for a more personalized approach to the Spanish-speaking rhinoplasty patient.

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Statement of Conformity: We adhere and affirm that this protocol is adjusted and respects the ethical principles for medical research in human beings and academic research of the Declaration of Helsinki of the World Medical Association in its 2013 version. Likewise, we welcome the Institutional Research Policy, Code of Conduct, standards, and recommendations of the Institutional Research Standard of the Corporate Committee on Research Ethics of the Fundación Santa Fe de Bogotá.

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