



## ORIGINAL PAPER

# [Translated article] Translation, validation, and cultural adaptation of the HSS-ES scale (Hospital for Special Surgery's [HSS] Shoulder Surgery Expectations Survey)

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### KEYWORDS

Preoperative expectations;  
Questionnaire;  
Shoulder;  
Validation study

### Abstract

**Introduction:** The questionnaire Hospital for Special Surgery Shoulder Surgery Expectations Survey (HSS-ES) is a tool used to assess the preoperative expectations of patients with shoulder pathologies. The purpose of this study is to translate, culturally adapt, and validate the Spanish version of the HSS-ES questionnaire to assess preoperative expectations in Spanish-speaking patients.

**Methodology:** Questionnaire validation study, using a structured method where a survey-type tool was processed, evaluated and validated. The study involved 70 patients from the shoulder surgery outpatient clinic of a tertiary care hospital, with shoulder pathologies requiring surgery.

**Results:** The version of the questionnaire translated into Spanish presented a very good internal consistency with a Cronbach's Alpha of 0.94 and a very good reproducibility with an Intraclass Correlation Coefficient (ICC) of 0.99.

**Conclusion:** The HSS-ES questionnaire presents an adequate intragroup validation and a strong intergroup correlation according to the internal consistency analysis of the questionnaire and the ICC. Therefore, it is considered an adequate questionnaire to use in the Spanish-speaking population.

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### PALABRAS CLAVE

Expectativas preoperatorias;  
Cuestionario;  
Hombro;  
Estudio de validación

### Traducción, adaptación cultural y validación del cuestionario HSS-ES (Hospital for Special Surgery [HSS] Shoulder Surgery Expectations Survey)

### Resumen

**Introducción:** El cuestionario Hospital for Special Surgery Shoulder Surgery Expectations Survey (HSS-ES) es una herramienta utilizada para evaluar las expectativas preoperatorias de los pacientes con patologías de hombro. El propósito de este estudio es realizar la traducción, la

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adaptación cultural y la validación a la versión en español del cuestionario HSS-ES para evaluar las expectativas preoperatorias en pacientes hispanoparlantes.

**Metodología:** Estudio tipo validación de cuestionario mediante un método estructurado donde se procesó, evaluó y validó una herramienta tipo encuesta. En el estudio participaron 70 pacientes de la consulta externa de cirugía de hombro de un hospital de tercer nivel, con patologías de hombro con indicación quirúrgica.

**Resultados:** La versión del cuestionario traducida al idioma español presentó una muy buena consistencia interna, con un alfa de Cronbach de 0,94 y una muy buena reproducibilidad, con un coeficiente de correlación intraclase (CCI) de 0,99.

**Conclusión:** El cuestionario HSS-ES presenta una adecuada validación intragrupo y una fuerte correlación intergrupo según el análisis de consistencia interna del cuestionario y el CCI, por lo cual se considera un cuestionario adecuado para utilizar en la población hispanoparlante.

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## Introduction

The outcome of surgical procedures to the shoulder has been determined by postoperative function, diagnostic imaging, range of motion and complications, but has not considered the patient's preoperative expectations for outcomes.<sup>1–9</sup> Knowing and establishing patient expectations prior to a procedure involves the patient in making decisions that meet the expectations of the outcomes achievable with the proposed surgery.<sup>5,6</sup>

The level of preoperative expectations correlates directly with better or worse subjective and objective outcomes.<sup>6,10,11</sup> Patients may have very high or low expectations for the outcome of a procedure, which may be unrealistic, affecting the postoperative outcome. Outcomes will be better when expectations are realistic and achievable, and worse when they are very high or unattainable, and unmet expectations are associated with lower satisfaction.<sup>4,12–15</sup>

There are several methodologies to assess the clinical and functional outcome of shoulder surgery,<sup>16–21</sup> but few assess patients' preoperative expectations.<sup>5,22,23</sup> The Hospital for Special Surgery (HSS) Shoulder Surgery Expectations Survey (HSS-ES) questionnaire assesses these expectations. The aim of this study is to translate, culturally adapt and validate the HSS-ES questionnaire into Spanish.

## Methodology

A scale validation study was conducted to translate the HSS-ES questionnaire into Spanish, taking into account the international recommendations of the American Academy of Orthopaedic Surgeons (AAOS).<sup>24</sup>

## Questionnaire

The HSS-ES questionnaire has 17 items that measure expectations of different aspects, such as pain relief, improvement in function and strength, and psychosocial functions related to activities of daily living. There are

five possible answers for each question: "very important", "somewhat important", "a little important", "I do not expect this", or "this does not apply to me".

A minimum sample size of 68 patients was determined, with a 95% confidence interval, an approximate correlation coefficient of .8 and an expected loss of 10%. Older patients with shoulder pathologies who were to undergo a surgical procedure were included. Patients with cognitive deficits or neurological disorders that meant they could not understand the questionnaire or patients with previous surgeries were not included. The patients came from the shoulder surgery practice of one of the authors, between January 2020 and May 2020, with different shoulder surgical pathologies.

## Translation and transcultural adaptation

The original English questionnaire was translated into Spanish by two independent translators with medical and research experience whose native language was Spanish but who were fluent in English, and a third translator whose native language was English, with a concordance in the versions close to 90% of the terms. The translation focused on the concept and not on the literal translation of the text. We sought to use language that was familiar to the target population, without using technical terms that could confuse the interpretation of the questions and/or answers. This was followed by a unification of concepts based on the three translations. The final Spanish questionnaire was defined through a reconciliation of the discrepancies in the versions. Two translators, whose native language was English, back-translated the Spanish version of the questionnaire, to determine semantic or conceptual differences, demonstrating that the translation of the questionnaire had the same meaning in Spanish as in English.

The translated version of the questionnaire was reviewed by three shoulder surgeons and a linguist with expertise in medical translations, who considered it appropriate and correct for use in Spanish. A pilot test was conducted with this version of the questionnaire, where 20 patients evaluated the clarity of the questionnaire. All patients were asked whether they understood the questions and were able to

Marque con una X sobre el número que mejor describa su respuesta a cada pregunta

¿Qué tan importante son las siguientes expectativas sobre el tratamiento de su hombro?	Muy importante	Mas o menos importante	Poco importante	Yo no espero esto	Este no es mi caso
Alivio del dolor durante el día	1	2	3	4	5
<input type="checkbox"/> Poco alivio del dolor Si usted espera esto, marque con una X en una de las siguientes: <input type="checkbox"/> Alivio parcial del dolor <input type="checkbox"/> Alivio completo del dolor					
Alivio del dolor durante la noche	1	2	3	4	5
Mejoría de la movilidad del hombro	1	2	3	4	5
<input type="checkbox"/> Mejoría de la movilidad actual del hombro Si usted espera esto, marque con una X en una de las siguientes: <input type="checkbox"/> Mejoría y recuperar la movilidad completa del hombro					
No presentar más episodios de dislocación en el hombro.	1	2	3	4	5
No presentar más traquidos en el hombro.	1	2	3	4	5
Mejorar la capacidad de cargar objetos mayores a 5 kilos (10 libras)	1	2	3	4	5
Mejorar la capacidad para alcanzar objetos por encima del hombro (por ejemplo, alcanzar una repisa alta)	1	2	3	4	5
Mejorar la capacidad para alcanzar objetos a los lados.	1	2	3	4	5
Mejorar las actividades de autocuidado (por ejemplo, bañarse, vestirse)	1	2	3	4	5
Poder trabajar de forma independiente o en su propio negocio.	1	2	3	4	5
Mejorar su bienestar psicológico	1	2	3	4	5
Mejorar la capacidad para interactuar con otras personas (por ejemplo, cuidar a alguien, jugar con niños)	1	2	3	4	5
Mejorar la capacidad para realizar actividades diarias (por ejemplo, la rutina diaria, actividades del hogar)	1	2	3	4	5
Mejorar la capacidad para manejar o para ponerse un cinturón de seguridad.	1	2	3	4	5
Mejorar la capacidad para hacer ejercicio o participar en deportes	1	2	3	4	5
<input type="checkbox"/> Participar en deportes recreacionales <input type="checkbox"/> Participar en deportes profesionalmente <input type="checkbox"/> Participar en deportes que no implican elevación del hombro por encima de la cabeza <input type="checkbox"/> Participar en deportes que implican la elevación del hombro por encima de la cabeza como por ejemplo baloncesto o voleibol.           Si usted espera esto, marque con una X en una o varias de las siguientes:					
Mejorar la capacidad para participar en actividades recreacionales (por ejemplo, bailar, jardinería)	1	2	3	4	5
Que el hombro vuelva a estar como antes que la enfermedad iniciara	1	2	3	4	5

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**Figure 1** Questionnaire to assess the expectations of patients who are to undergo shoulder surgery, translated into Spanish.

interpret them correctly, to assess the adaptation process, intelligibility, and comprehension of the questions. Based on the comments of the respondents and the research team, the final version of the questionnaire was edited and corrected with these adjustments.

### Internal consistency

Cronbach's alpha was used to measure the reliability of the questionnaire, and to determine test-retest reliability the questionnaire was re-tested on the same patients two weeks after the first completion of the questionnaire and the intraclass correlation coefficient (ICC) was determined.

Continuous quantitative variables, such as age, were analysed using measures of central tendency, and qualitative variables, such as gender and education, were assessed using frequency tables and percentages. All statistical

analyses were performed with the free statistical software R version 4.1.1 of 2021.

### Results

After the translation process, the applicability-viability pilot test was performed, where 20 patients with shoulder pathology were included: 11 (55%) with rotator cuff pathology, 5 (25%) with glenohumeral arthrosis, 2 (10%) with shoulder instability, and 2 (10%) with other pathologies. The average age for this test was 53.5 years; 50% of the patients were male and the majority (65%) had a low educational level. The feasibility of the questionnaire was analysed and it was determined that the questionnaire can be used without difficulty.

The average time to answer the test was 5 min and 30s, with a range of 4.5–7 min, with no significant differences with the time standard established for the test in the

original language of 5 min ( $p < .05$ ). All of the patients answered all the test questions within the time described, but it was evident that 5 patients (25%) had problems with one question and one patient (5%) with two questions. Question 4 presented the most problems in responding – in 25% of the patients – due to the term “*luxación*” (luxation) used in the question, and therefore it was changed to “*dislocación*” (dislocation) which was more recognised and did not present the aforementioned response problem. In relation to the rest of the questions, one patient (5%) had problems with question 3 and one patient (5%) with question 8; this was considered acceptable as it was below 15% of the total number of those evaluated.

In the second phase of the validation, 70 patients were included, predominantly female (57.1%). The questionnaire was answered twice, with an average of 26 points on the first occasion and 25 points on the second occasion after two weeks, with no statistically significant difference between them ( $p > .05$ ). The performance of the questionnaire in Spanish showed very good internal consistency, with a Cronbach’s alpha of .94, and very good reproducibility, with a CCI of .99 (95% CI: .97–.99).

## Discussion

The version of the HSS-ES questionnaire translated into Spanish (Fig. 1) showed a very good performance, with very good internal consistency and very good reproducibility of the questionnaire, with values higher than the minimum criterion of .80 recommended by Fleiss et al.<sup>25,26</sup> All the patients completed the questionnaire without difficulty, which means that the translated questionnaire had good cultural adaptation. Based on the above, we can state that the performance of the questionnaire in Spanish is adequate for its application in patients with shoulder pathologies.

The HSS-ES is a useful instrument to measure patient expectations before shoulder surgery,<sup>4,5</sup> but according to the literature review, this widely used tool has not been validated in Spanish. Because of the lack of available information on the internal consistency of the original tool, the results of this Spanish version were not compared with those of the English version.

Shoulder pathologies are common and cause some degree of upper limb disability and pain, requiring surgical intervention in some cases, which require careful preoperative assessment.<sup>15</sup> Outcomes are generally determined by the surgeon, diagnostic imaging, postoperative complications, and the clinical course of the patients.<sup>6,7</sup>

Preoperative patient expectations have been shown to be a major determinant of outcome.<sup>5</sup> Although different questionnaires have been developed, they are not specific and do not assess the expectations of patients with surgical indications for different shoulder pathologies.<sup>4,5</sup> In 2002, Mancuso et al.<sup>5</sup> developed a questionnaire to assess these expectations, demonstrating that it is a useful tool in the surgeon’s daily practice and that it allows clear goals to be set for the surgical procedure.

The HSS-ES questionnaire is a very useful tool to learn patients’ real expectations of their surgery, to better understand what is important for them, to have clear and real goals and, therefore, a more objective doctor-patient

conversation regarding the expected results and the best treatment, leading to better outcomes and greater postoperative satisfaction.<sup>5</sup>

The study has some limitations, such as the absence of other questionnaires in Spanish that assess preoperative expectations to compare with the HSS-ES. Further studies should be conducted to consider covariates such as race or work activity among the factors that may influence patient expectations and to compare different patient expectations with postoperative outcomes and the impression of the procedure.

The questionnaire can be applied routinely, because it can be completed in a few minutes and provides valuable information, and is a useful tool for different clinical studies and international comparisons of preoperative expectations in shoulder surgery.

## Conclusion

The HSS-ES questionnaire has adequate intragroup validation and a strong intergroup correlation according to the internal consistency analysis with Cronbach’s alpha and the CCI, and is therefore considered a suitable questionnaire for use in the Spanish-speaking population.

## Level of evidence

Level of evidence III.

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## Conflict of interests

The authors have no conflict of interests to declare.

## Approval of the ethics committee

Ethics Committee of the Faculty of Medicine of the National University of Colombia. Evaluation and approval act N° 014-150-20.

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