

A Dutch Translation of the Hospital for Special Surgery Shoulder Expectation Survey (HSS-ES) for Preoperative Assessment in Total Shoulder Arthroplasty Patients

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To date, no Dutch questionnaire exists to administer preoperative patient expectations in patients scheduled to undergo a total shoulder arthroplasty. The aim of this study is to develop a Dutch translation of the Hospital for Special Surgery Expectations Survey using a standardized translation procedure, to use both in clinical practice and in scientific research.

Translation is performed on the basis of a forward - backward translation. The clarity of the pre-final Dutch version is tested on 10-30 patients scheduled to undergo a total shoulder arthroplasty. The answers of the patients are studied prospectively at a single time point.

All the questions of the Hospital for Special Surgery Expectation Survey are clear to more than 80% of patients, which is the norm value where it can be assumed that the question is clearly understandable.

The Dutch version of the Hospital for Special Surgery Expectations Survey can be considered clear, as all questions did not give any ambiguities for 80% of the patients. This study provides a foundation needed for further research to assess the psychometric properties of the Dutch translation of the Hospital for Special Surgery Expectations Survey.

Keywords: Patient expectations, Total shoulder arthroplasty, Translation procedure, Self-reported outcome measures.

INTRODUCTION

The incidence of total shoulder arthroplasty all over the world has increased in recent years¹⁻⁵. The number of primary shoulder arthroplasties is projected to increase up to 333% in young patients and even up to 755% in older patients by 2030⁶.

In the past, postoperative outcome was especially defined by postoperative function as estimated by the surgeon, imaging, range of motion and postoperative complications^{7,8}. Currently there is a tendency where patient-dependent assessments have become increasingly important. Considering this increase in both procedures and patient-dependent assessments, there is a great need for standardized questionnaires in various languages.

Patient-dependent research includes expectations regarding surgery and rehabilitation after surgery. Expectations in total knee and hip arthroplasty has been thoroughly studied⁹⁻¹⁶. However, studies researching expectations in patients with total shoulder arthroplasty are fewer¹⁷⁻²³. These expectations may influence

treatment outcomes^{18,20,21,23}. Therefore, it may be important to assess these preoperative expectations. Questionnaires can be used to determine these patient expectations in a standardized manner. Preoperative patient expectations in patients undergoing total shoulder arthroplasty can be registered through the Hospital for Special Surgery Shoulder Expectation Survey (HSS-ES)¹⁷. The HSS-ES has only been translated to Spanish²⁴. Unfortunately, the HSS-ES has to our knowledge not yet been translated to Dutch. This makes it impossible to use a standardized questionnaire to administer the preoperative patient expectations in Dutch speaking countries.

A Dutch translation of the HSS-ES would ensure preoperative expectations to be administered in the same way in all Dutch-speaking countries. Preoperative patient expectations could be of influence in the treatment plan following total shoulder arthroplasty, and even influence the postoperative outcome^{18,20,21,23}. Following this, if healthcare professionals could assess preoperative patients' expectations, they could use and even improve postoperative outcomes. Clinical

research would also benefit from a Dutch translation of the HSS-ES.

Considering the need for a Dutch measurement method for preoperative patient expectations, the aim of this study is to develop a Dutch translation of the HSS-ES using a standardized translation procedure, to use both in clinical practice and in scientific research.

MATERIALS AND METHODS

Translation procedure

The Dutch translation procedure of the HSS-ES was conducted by using a forward-backward procedure, following the guidelines proposed by Beaton et al.²⁵. Adhering to these guidelines ensured the questionnaire's effective translation, maintaining both linguistic correctness and conceptual accuracy.

Stage one consisted of the initial forward translation of the HSS-ES from English to Dutch by three independent native Dutch translators. Two translators had a degree in linguistics and one translator was a physiotherapist.

The second stage consisted of a consensus meeting with the three translators. The differences and problems were discussed, and the three different translations were synthesized into one final Dutch translation.

During the third stage this final Dutch translation was translated back into English, the backward translation. This was performed by two native English translators, who could speak Dutch.

The fourth stage was the expert committee where the researchers and the translators discussed the previously developed questionnaires. The aim of this fourth phase was to develop a pre-final Dutch questionnaire to be tested on preoperative total shoulder arthroplasty patients. This included a synthesis process detailing how the final decision was made and considering contextual differences between English and Dutch.

The final stage, the pre-final version of the translated questionnaire was tested on patients scheduled for a total shoulder arthroplasty. The clearness of the questions was analyzed to pre-assess the level of its understanding.

The aim was to identify ambiguous questions and misinterpretations of the items in the questionnaire to develop the final version of the Dutch HSS-ES questionnaire.

The clarity of each question was verified by the patient answering yes or no to whether the question was clear. If a question was perceived as ambiguous by more than 20% of the participants, the translated question was not sufficiently understandable for the target group. A question was defined clear by the patients when at least 80% of the participants answered "yes" to the clarity question

A visual overview of the translation procedure can be found in Table I.

Study design and study population

The sample size was set to be 10-35 participants, based on available literature²⁵⁻³². Patients scheduled for a total shoulder arthroplasty between March and October 2023, performed by an experienced orthopaedic surgeon, OV, at AZ Monica Antwerp were asked to participate in the study. Detailed information was recorded, including age and gender.

In this cohort study, participants were eligible when the following inclusion criteria were met: (i) patients aged 18 years or older; (ii) both men and women, (iii) scheduled for a total shoulder arthroplasty; (iv) Dutch speakers; (v) literate patients and being able to read the questionnaire without any help. Patients were excluded when they did not understand the Dutch language and were illiterate.

Participants were required to sign an informed consent before participating in the study. With this document, patients were fully informed and gave their consent for participating in the study. All included patients were properly informed about the purpose and the set-up of the study. The informed consent is preferably delivered to the patient by e-mail, if the participant did not have an email, it was sent by post. The central and local ethical committees of the University Hospital Antwerp and AZ Monica approved this study (Ref: B300201942512). The informed consent can be found in Appendix 1.

Table I. — Visual overview translation procedure.

TRANSLATION PROCEDURE		
Stage 1	Forward translation	Three independent translators (native Dutch speakers)
Stage 2	Synthesis	Researchers and translators
Stage 3	Backward translation	Two independent translators (native English speakers)
Stage 4	Expert committee	Researchers and translators
Stage 5	Testing pre-final version	Researchers

Questionnaire

The HSS-ES consists of 17 questions, with each expectation question having five possible answers: “very important,” “somewhat important,” “a little important,” “I do not expect this,” and “this does not apply to me”¹⁷. Every possible answer was converted in an expectation score. “Very important” corresponded to a score of three and “I do not expect this” is rated a score of zero. When “this does not apply to me” was answered, this question was excluded from the calculation. The different scores of the 17 (or less) questions were accumulated. This total score was divided by 51, the maximum score and then multiplied by 100 to convert the result to a scale of 0 – 100. When questions were excluded, the total score was divided by 51 minus three times the number of questions excluded, and then multiplied by 100. A total of 100 points can be achieved, indicating higher preoperative expectations with a higher score. The equation can be found in Figure 1.

RESULTS

Translation

Both forward and backward translation had no major variations in content between translators, only minor variations in sentence structure and word choices. Minor differences in translation were corrected to one questionnaire by the researchers and translators during a consensus meeting. This involved two separate meetings for both forward and backward translation. No issues occurred during the translation procedure of the HSS-ES into pre-final Dutch questionnaire. There

was a well-structured communication between the translators and between translators and researchers. In the end, one final questionnaire was created. The final adjustments were made by the researchers to make the questionnaire easy to read and understand without changing the content. This pre-final questionnaire was used to test on total shoulder arthroplasty patients. The complete translated HSS-ES can be found in Appendix 2 (Scan the QR code at the back of this article).

Protocol

Seventeen patients scheduled for a total shoulder arthroplasty were contacted to participate in the study. An overall of 15 patients has completed the HSS-ES preoperatively. This corresponds to a response rate of 88 %. Reasons for non-participation were no interest in the study, surgery that was cancelled or surgery that was postponed.

Of these 15 participants, 13 have completed the questionnaire orally over the telephone call. During this conversation 5 participants indicated a question was considered ambiguous. Two patients had completed the questionnaire by mail. When they were contacted afterwards by telephone to check the ambiguities, all questions were clear. All patients had completed and signed the informed consent.

Four men and 11 women participated in the study. This study found no difference in clarity of questions between men and women. Patient characteristics can be found in Table III.

For all questions of the HSS-ES, the norm value of 80% that considers the question to be clear is achieved.

Fig. 1 — Total score HSS-ES.

*Score obtained after completing all the questions; **Converted score to a 0-100 scale.

$$\frac{\text{Total score}^*}{51 - (3 * \text{number of excluded questions})} * 100 = \text{Final score}^{**}$$

Table II. — Study protocol.

STUDY PROTOCOL	
Step 1	Contact the patient by phone
Step 2	Explain the purpose of the study and ask if they would like to participate in the study by completing the pre-final Dutch HSS-ES questionnaire
Step 3	Ask how the patient would like to complete the questionnaire <ul style="list-style-type: none"> ● Option 1 (preferred): verbally via telephone ● Option 2: send the questionnaire by e-mail or post
Step 4	Complete and sign informed consent send by e-mail or postmail
Step 5	Asking for any ambiguities regarding the questions <ul style="list-style-type: none"> ● Option 1: in the first phone call ● Option 2: a second telephone conversation after the completed questionnaire has been received

Still, some questions have been cited as unclear by certain patients. This is shown schematically in Table IV.

One patient had experienced some confusion with the question about improving the ability to exercise or participate in sports activities. The proper meaning of a sport activity was difficult to interpret by the patient. Whether hiking is an athletic activity or not was her uncertainty. The sub-question associated with this question was participating in recreational sports, competitive, overhead, or non-overhead sports, to frame a further clarification. By this subdivision as a continuation of the general question, the question is in the end clear enough for the participant. The question that verifies the expectation regarding carrying out (paid) work was also perceived as unclear by one patient. It was not clear to the patient whether gardening belongs within the category of work. The patient provided an alternative translation for this question, such as performing your job. Two patients did not understand what was meant by clicking of the shoulder, because the participant has not experienced this. The question about expecting mental health to improve also caused confusion for one patient. The patient thinks the mental health aspect is very important, but he currently has good mental health, and the shoulder has no influence on this. It is unclear to him whether to mark this as “very important” or “not applicable”.

Considering the norm-value of 80% who is achieved for every question, no question was changed. The final Dutch translation of the HSS-ES is now finalized.

DISCUSSION

Because of the global diversity in society, there is a need for validated questionnaires in different languages. There is already a validated English-language version of the HSS-ES questionnaire that aims to assess preoperative expectations in total shoulder arthroplasty patients. Therefore a Dutch version of the HSS-ES has been created. A translated Dutch questionnaire ensures that preoperative expectations can be measured the same way in all Dutch-speaking patients and, if possible, managed during preoperative rehabilitation.

Table III. — Patient characteristics.

Characteristics	
Gender	4 ♂; 11 ♀
Age	± 68 (46-85)
♂ = men; ♀ = women	

In general, the Dutch HSS-ES questions are completely understandable to patients, with a few exceptions. All questions of the questionnaire exceeded the 80% clarity for the total shoulder arthroplasty patients, which was set as the norm value to consider a clear intelligible question. The Dutch translation of the HSS-ES contains no ambiguities. The findings of this study are of added value for future research validating a Dutch HSS-ES and make it applicable for clinical practice in Dutch-speaking regions. With this study, a good base has been given to research the psychometric properties of this Dutch translation of the HSS-ES in the future and make it c in clinical practice.

A large number of translators was used in the protocol of this study. In the forward translation of the translation procedure, there are two people with degrees in linguistics. In the backward translation, there are two native English speakers. This number of translators is recommended in the protocol to generate a questionnaire that incorporates the expertise of the translators²⁵.

The sample size set in this study was broad. The sample size of 15 participants was between the pre-formulated ideal range of 10-35 persons²⁵⁻³². Thus, a sample size within the norm value of literature is achieved. A higher sample size would make the results of this study more credible. The reasons for non-participation in the study were not related to the patient’s expectations or severity of the injury. Another strength of this study is that there is no deviation from the predetermined protocol during the study. The execution of the study protocol was proceeded²⁵. This protocol has been used several times in the translation of self-reported questionnaires²⁶⁻³².

The administration of the HSS-ES is done in two ways: orally over the phone which is preferred, or by mail. Ideally, it would be preferably carried out in one way to ensure the results are more comparable and the method of administering the questionnaire would certainly not influence the results. It would have been better if the questionnaire had been administered in a standardized and same way, but unfortunately this is not accomplished because two patients preferred to do it via mail. Unfortunately, determining psychometric properties of the Dutch translation of the HSS-ES was not the scope of this study. Future research should definitely focus of these properties to evaluate the feasibility of this questionnaire in clinical practice.

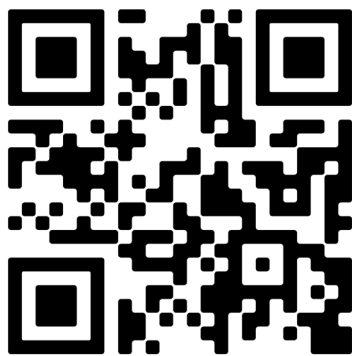
In conclusion, the final version of a Dutch translation of the HSS-ES is clear and understandable. All questions of the Dutch HSS-ES exceeded the norm value of 80%. Further research is needed to determine

Table IV. — Overview of clarity of the HSS-ES Dutch translation.

N°	QUESTION	CLEAR	UNCLEAR	%
1	Pijnverlichting overdag	15	0	100
2	Pijnverlichting 's nachts	15	0	100
3	Verbeteren van de beweeglijkheid van de schouder	15	0	100
4	Ontwrichting van de schouder voorkomen	15	0	100
5	Het “klikken” van de schouder voorkomen	13	2	86.6
6	Verbeteren van de mogelijkheid om voorwerpen van meer dan 5kg te dragen	15	0	100
7	Verbeteren van de mogelijkheid om boven schouderhoogte te reiken (bv. naar hoge plank)	15	0	100
8	Verbeteren van de mogelijkheid om zijwaarts te reiken	15	0	100
9	Verbeteren van de mogelijkheid tot zelfzorg (bv. zichzelf wassen/ aankleden)	15	0	100
10	Uitoefenen van (betaald) werk	13	2	86.6
11	Verbeteren van de mentale gezondheid	15	1	93.3
12	Verbeteren van de mogelijkheid tot interactie met anderen, (bv. voor iemand zorgen/ spelen met kinderen)	15	0	100
13	Verbeteren van de mogelijkheid tot het uitvoeren van dagelijkse activiteiten (bv. dagelijkse routine- en huishoudelijke taken)	15	0	100
14	Verbeteren van de mogelijkheid om met een auto te rijden of een autogordel aan te doen	15	0	100
15	Verbeteren van de mogelijkheid om te oefenen of deel te nemen aan sportactiviteiten	14	1	93.3
16	Verbeteren van de mogelijkheid om deel te nemen aan vrijetijdsactiviteiten (bv. dansen/ tuinieren)	15	0	100
17	Dat de schouder hetzelfde is als voor het probleem begon	15	0	100

the psychometric properties of the Dutch translation of the HSS-ES. This study provides a foundation to perform future research in order for this Dutch HSS-ES to be used in the broad clinical setting in Dutch speaking parts of the world.

Appendices 1 & 2 (scan QR)



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