ORIGINAL ARTICLE

[Translated article] Cross-cultural adaptation for the Spanish population of the modified Harris score for functional and symptomatic hip joint assessment

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Abstract

Background and objectives: The modified Harris hip score, is one of the most widely used scales for the functional assessment of hip pathology of the patients. However, there is no cross-cultural adaptation for the Spanish society. Therefore, this study aims to obtain a cross-cultural adaptation of the modified Harris hip score for the Spanish population.

Materials and methods: For the cross-cultural adaptation the Beaton method was used, which includes: two translations into Spanish; expert review of the two provisional versions and obtaining a single Spanish version; reverse translation (into English) of the Spanish version; and application of the adapted version. The adapted version was applied twice to one hundred patients, six months apart.

Results: Between the initial and final application of the adapted version, no clinically relevant differences were found.

Conclusions: A cross-cultural translation and adaptation of the modified Harris hip score for the Spanish population was obtained, which should be applied to the Spanish population and to all Spanish-speaking countries, as long as they do not have an adapted version for the population to which they belong.

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Adaptación transcultural para la población española de la escala de Harris modificada para la valoración funcional y sintomática de la articulación de la cadera

Resumen

Antecedente y objetivos: La Escala de Harris modificada, es una de las escalas más utilizadas para la valoración funcional de los pacientes en la patología de cadera. Sin embargo, no existe una adaptación transcultural para la sociedad española. Por tanto, este estudio se plantea obtener una adaptación transcultural para la población española de la escala de cadera de Harris modificada.

Materiales y métodos: Para la adaptación transcultural se utilizó el método de Beaton que incluye: dos traducciones al idioma español; revisión por expertos de las dos versiones provisionales y obtención de una única versión en español; traducción reversa (a inglés) de la versión en español; y aplicación de la versión adaptada. La versión adaptada fue aplicada en dos ocasiones a cien pacientes, con un periodo de separación de seis meses.

Resultados: Entre la aplicación inicial y final de la versión adaptada, no se encontró diferencias clínicamente relevantes.

Conclusiones: Se obtuvo una traducción y adaptación transcultural para la población española de la escala de cadera de Harris modificada, la misma que debería ser aplicada a la población española y a todos los países hispanohablantes, mientras no cuenten con una versión adaptada para la población a la que pertenecen.

Introduction

In orthopaedic surgery, patient feedback is becoming increasingly important when analysing the results of procedures. This tool, known as ''patient-reported outcome'', allows subjective information to be considered by assessing activities of daily living in the patient's life.[1] One example of measuring the informed outcome by the patient is the modified Harris scale.

Initially the Harris scale, published in 1969, considered information provided by both the patient and the surgeon. Later, the modified Harris scale was published which considered exclusively subjective data of daily activities reported by the patient.[2] The modified Harris scale, through a questionnaire given to the patient, enabled outcomes to be assessed after a hip surgery procedure, with consideration of pain and hip joint function.[2] Specifically, the activities considered to assess functionality are: ambulation (limp, support, tolerated distance), climbing stairs, putting on socks and shoes, ability to sit down and use public transport.[2] On assessing these parameters, a maximum score of 100 points is obtained. A score between 90 and 100 is considered an excellent result, between 80 and 89 is good, between 70 and 79 is acceptable and under 70 is a poor outcome.[2]

Despite being one of the most used scales in hip disease, the only existing non-validated translation into Spanish is the one published by the Ministry of Health in Chile (2010) and the only cross-cultural adaptations published are for the Portuguese, Turkish and Italian populations.[3–7] There therefore is no official translation into Spanish and even less into a cross-cultural adaptation using expressions which are more widely understood by Spanish society.

Methods

For cross-cultural adaptation of the modified Harris scale the method proposed by Beaton was taken as reference, using the following steps (Fig. 1).[8]

Double translation

Two translations into Spanish were made from the modified Harris scale. These were made by 2 independent, accredited translators, obtaining 2 Spanish versions.

Review of provisional versions

The 2 versions obtained were analysed by the Hip Unit of the Hospital Universitari Vall d'Hebrón, involving orthopaedic surgeons specialising in hips and resident physicians of Orthopaedic and Trauma surgery. Each item was assessed in the 2 Spanish translation versions, correcting and adapting words and phrases which could have been misinterpreted by patents. Later, the 2 corrected translations were then joined together, creating a single version in Spanish.

Back translations

The version obtained in Spanish was then back-translated into English by another 2 independent, accredited translators. These new versions in English were reviewed by the same medical team. The original version and back-translations were considered to be similar and expressed the same. We thus ensured that the version obtained in Spanish was translated correctly.
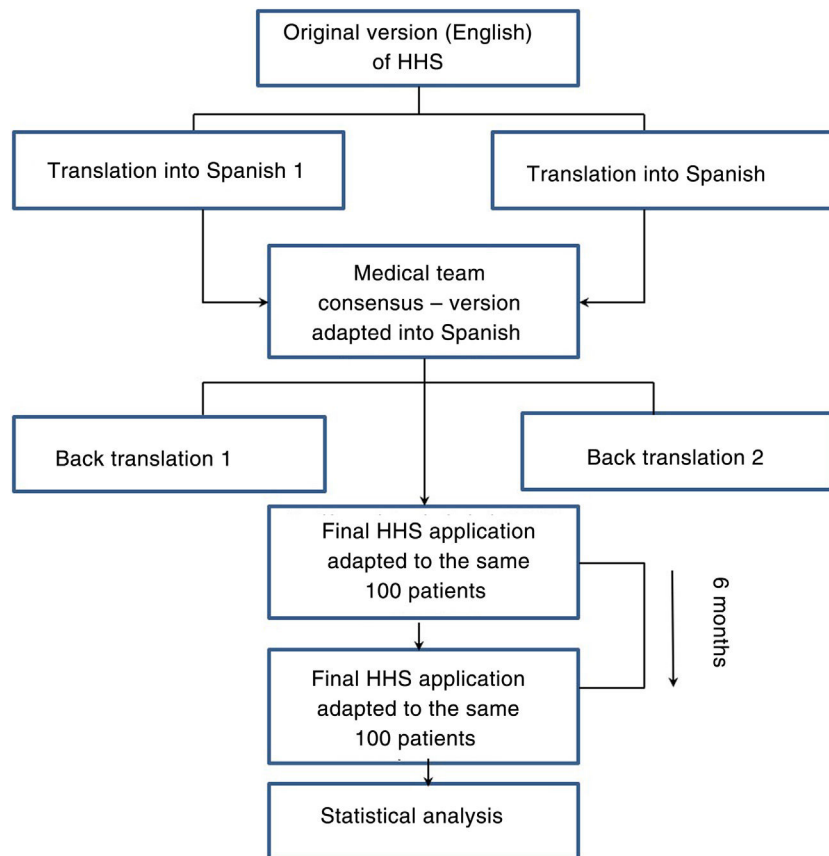
Figure 1 Methodology. Summary of applied methodology for the cross-cultural adaptation of the modified Harris scale.

Application of the modified Harris scale

The adapted version of the modified Harris scale was applied prospectively in June 2020, to 100 randomly chosen patients, operated on for total hip replacement in the Hospital Universitari Vall d'Hebrón between 2015 and 2018. After a period of 6 months, the version adapted into Spanish was again applied to the same 100 patents, thus assessing the outcome consistency.

Statistical analysis

The mean and standard deviation of the outcomes obtained was determined in each of the items and from the final modified Harris scale score. In this way the outcomes of the initial application and that obtained after the 6-month period was obtained. Using the statistical SPSS® v.27.0 software (IBM, Armonk, NY, U.S.A.), programme, the student's t test used to compare the means of the 2 applications.

Results

Following the methods suggested by Beaton a cross-cultural adaptation of the modified Harris scale was obtained and the changes made for its obtainment, are show in Table 1.

The score for pain, limping, ability to sit and to use public transport had statistically significant differences between the initial and the final application of the adapted Harris scale, with a differential mean of 1.76; .15; .40 and .05 points, respectively (Table 2). In the same way, a statistically significant difference was found of 3.623 points in the total Harris scale between the 2 applications ($p = -004$). However, the evaluation of support usage, distance walked, way of using stairs and ability to put on shoes and socks, had no significant differences.

Discussion

With the progressive increase of multicentre projects that include hospital centres in several countries, it is essential that measurement outcome tools are consistent in different populations.[8] For this to happen mere translation is not sufficient, as they also have to be adapted to comprehensible terms for the society they are to be applied to.[8,9]

Despite being the most used scale for the functional patient assessment after total hip replacement, the only published Spanish version of the modified version of the Harris scale in that published by the Ministry of Health of the Government of Chile.[4,10] However, this scale, with a maximum of 80 points, in fact corresponds to the Mayo hip score. The Mayo hip score, proposed in 1985, is shorter than the Harris scale, it does not consider the ability to sit down or the ability to use public transport, and gives a different scale to each section.[10-12] Therefore, when assessing different variables with different scores, the results obtained

Table 1 Translations made. The original version (column 1) was translated into 2 versions in Spanish by 2 different translators (columns 2–3). The 2 versions were discussed obtaining a single version (column 4). Two back translations were made to check the similarity of the versions in English (columns 5 and 6).

Original version	Translations		Adapted version	Back versions	
	T1	T2		TR1	TR2
PAIN (44 possible) None or ignores (44) Slight, occasional, no compromise in activities (40) Mild pain, no effect on ordinary activities, pain after activity, uses aspirin (30). Moderate, tolerable, makes concessions, occasional codeine (20) Marked, serious Totally disabled (0)	**DOLOR (44 points)** Inexistente (44) leve, ocasional, no afecta a sus actividades (40) Dolor Leve, no afecta a su actividad normal, dolor tras realizar actividades, uso de aspirina (30) Moderado, tolerable, a veces más Leve, codeína de forma ocasional (20) Notable, Severe (10) Totalmente incapacitado (0)	**DOLOR (44 possibles)** Ninguno o ignora (44) Ligero, ocasional, sin compromiso en las actividades (40) Dolor Leve, sin efecto sobre las actividades ordinarias, dolor después de la actividad, usa aspirina (30) Moderado, tolerable, hace concesiones, codeína ocasional (20) Marcado, serio (10) Totalmente discapacitado (0)	**DOLOR (44 points)** Ninguno o ignora (44) Leve, ocasional, no afecta a sus actividades Dolor Leve, no afecta a su actividad normal, dolor después de realizar actividades, precisa paracetamol/ metamizol/ Antiinflamatorios no esteroideos Moderado, tolerable, a veces más Leve, precisa tramadol ocasional Notable, Severe Totalmente incapacitado	**PAIN (44 points)** None or do not know (44) Mild, occasional, does not affect activities (40) Mild pain, does not affect your normal activity, pain after carrying out activities, needs paracetamol/ metamizole/ non-steroidal anti-inflammatory drugs (30) Moderate, tolerable, at times more mild, needs occasional tramadol (20) Notable, severe (10) Completely incapacitated (0)	**PAIN (44 points)** None or it can be ignored (44) Slight, occasional with no compromise in activities (40) Mild pain, no effect on average activities, pain after unusual activities, requires paracetamol/ metamizole/ non-steroidal anti-inflammatory drugs (30) Moderate pain, tolerable but makes concessions to pain, requires occasional tramadol (20) Marked pain, serious limitation of activities (10) Totally disabled (0)
FUNCTION (47 possible) **A. Gait (33 possible)** **1. Limp** None (11) Slight (8) Moderate (5) Severe (0) Unable to walk (0)	**FUNCIÓN (47 points)** **A. Marcha (33 points)** **1. Cojera** Inexistente (11) leve (8) Moderado (5) Severe (0) No puede caminar (0)	**FUNCIÓN (47 posibles)** **A. Marcha (33 posibles)** **1. Cojera** Ninguna (11) leve (8) Moderado (5) Severe (0) Incapaz de caminar (0)	**FUNCIÓN (47 points)** **A. Marcha (33 points)** **1. Cojera** Inexistente (11) leve (8) Moderado (5) Severe (0) Incapaz de caminar (0)	**FUNCTIONING (47 points)** **A. Waking ability (33 points)** **1. Limp** None (11) Mild (8) Moderate (5) Severe (0) Unable to walk (0)	**FUNCTION (47 points)** **A. Gait (33 points)** **1. Limp** None (11) Slight (8) Moderate (5) Severe (0) Unable to walk (0)
2. Support None (11) Cane for long walks (7) Cane full time (5) One crutch (3) Two canes (2) Two crutches (0) Unable to walk (0)	**2. Apoyo/Soporte** Ninguno (11) Necesita un bastón para distancias largas (7) Necesita un bastón siempre (5) Una muleta (3) Dos bastones (2) Dos muletas (0) No puede caminar (0)	**2. Apoyo** Ninguno (11) Bastón para largas caminatas (7) Bastón a tiempo completo (5) Una muleta (3) Dos bastones (2) Dos muletas (0) Incapaz de de caminar (0)	**2. Apoyo/Soporte** Ninguno (11) Bastón para distancias largas (7) Bastón siempre (5) Una muleta (3) Dos bastones (2) Dos muletas (0) Incapaz de caminar (0)	**2. Aid/Support** None (11) Cane used for long walks (7) Always aided with a cane (5) A crutch (3) Two canes (2) Two crutches (0) Unable to walk (0)	**2. Support** None (11) Walking stick for long walks (7) Walking stick for most of the time (5) One crutch (3) Two walking sticks (2) Two crutches (0) Unable to walk (0)

Table 1 (*Continued*)

Original version	Translations		Adapted version	Back versions	
	T1	T2		TR1	TR2
3. Distance walked Unlimited (11) Six blocks (8) Two or three blocks (5) Indoor only (2) Bed and chair (0)	**3. Distancia recorrida** Ilimitada (11) Seis manzanas (8) Dos o tres manzanas (5) Doméstico (2) Cama-silla (0)	**3. Distancia caminada** Ilimitada (11) Seis manzanas (8) Dos o tres manzanas (5) Solo interior (2) Cama y silla (0)	**3. Distancia caminada** Ilimitada (11) Seis calles (8) Dos o tres calles (5) Solo interior (2) Cama y silla (0)	**3. Distance walked** Unlimited (11) Six streets (8) Two or three streets (5) Only inside (2) Bed to chair (0)	**3. Distance walked** Not limited (11) Six streets (8) Two or three streets (5) Indoors only (2) From bed to chair (0)
B. Functional activities (14 possible) 1. Stairs Normally (4) Normally with banister (2) Any method (1) Unable (0)	**B. Actividades funcionales (14 points) 1. Escalera** Con normalidad (4) Con normalidad si tiene barandilla (2) Cualquier método (1) Incapacitado (0)	**B. Actividades funcionales (14 posibles) 1. Escalera** Normal (4) Normal con barandilla (2) Cualquier método (1) Unable to (0)	**B. Actividades funcionales (14 points) 1. escalera** Con normalidad (4) Con normalidad si tiene barandilla (2) Cualquier método (1) Unable to (0)	**B. Functional activities (14 points) 1. Stairs** As normal (4) As normal if there is a railing (2) Any method (1) Not able (0)	**B. Functional activities (14 points) 1. Stairs** Normally without using a railing (4) Normally using a railing (2) In any manner (1) Unable (0)
2. Shoes and socks With ease (4) With difficulty (2) Unable (0)	**2. Calzado y calcetines** Con facilidad (4) Con dificultad (2) Incapacitado (0)	**2. Calzado y calcetines** Con facilidad (4) Con dificultad (2) Incapaz (0)	**2. Calzado y calcetines** Con facilidad (4) Con dificultad (2) Incapaz (0)	**2. Shoes and socks** Easily (4) With difficulty (2) Not able (0)	**2. Shoes and socks** With ease (4) With difficulty (2) Unable (0)
3. Sitting Any chair for 1 h (5) On a high chair for one-half hour (3) Unable to sit comfortably in any chair (0)	**3. Capacidad para sentarse** Es capaz de sentarse en cualquier silla durante una hora (5) Es capaz de permanecer sentado en una silla alta durante media hora (3) No es capaz de sentarse de forma cómoda en ninguna silla (0)	**3. Sentado** Cualquier silla durante una hora (5) En una silla durante media hora (3) Incapaz de sentarse cómodamente en ninguna silla (0)	**3. Capacidad para sentarse** Cualquier silla durante una hora (5) En una silla alta durante media hora (3) Incapaz de sentarse cómodamente en ninguna silla (0)	**3. Ability to sit down** Any sit for 1 h (5) In a high chair for half an hour (3) Unable to sit comfortably in any chair (0)	**3. Sitting** Any chair for 1 h (5) On a high chair for half an hour (3) Unable to sit comfortably on any chair (0)
4. Public transportation Able to enter public transportation (1) Unable to use public transportation (0)	**4. Transporte público** Puede usar el transporte público (1) No puede usar el transporte público (0)	**4. Transporte público** Capaz de acceder al transporte público (1) Incapaz de usar el transporte público (0)	**4. Transporte público** Capaz de usar el transporte público (1) Incapaz de usar el transporte público (0)	**4. Public transportation** Able to use public transport (1) Unable to use public transport (0)	**4. Public transport** Able to enter public transport (1) Unable to enter public transport (0)

with the Mayo scale are not comparable to those obtained with the Harris scale.[10] This supports even more the need for cross-cultural adaptation of the Harris scale aimed at the Spanish population.

To obtain a cross-cultural adaptation of a scale a validated method must be applied, which requires an equivalence between the original version and the adapted one.[8] To do this in this study, the cross-cultural adaptation guide

Table 2 Comparison of means between initial and final application of the adapted Harris scale. The means obtained in each section and in the final Harris scale, with standard deviation, mean difference and p value.

	Adapted Harris (initial application)	Adapted Harris (final application)	Mean difference	*p*
Pain	35.98 (8.76)	37.74 (6.61)	−1.76	.008*
Limp	9.35 (2.56)	9.5 (2.42)	−.15	.025*
Support	8.76 (3.38)	8.52 (3.64)	.24	.051
Distance walked	9.47 (2.58)	9.65 (2.31)	−.18	.057
Stairs	2.94 (1.30)	3 (1.47)	−.06	.482
Shoes and socks	2.82 (1.45)	2.84 (1.43)	−.02	.32
Sitting	4.4 (1.07)	4.8 (.60)	−.40	.001*
Public transport	.69 (.46)	.74 (.44)	−.05	.02*
Total mean of the Harris scale	80.83 (18.77)	84.46 (14.73)	−3.63	.004*

* Statistically significant differences (*p* < .05).

Table 3 Cross-cultural adaptation into Spanish of the modified Harris hip scale.

I. PAIN (44 points)		3. Distance walked	
None or ignores	44	Unlimited	11
Slight, occasional, no compromise in activities	40	Six blocks	8
Mild, no effect on ordinary activity, pain after activities, requires paracetamol/metamizol/non-steroidal anti-inflammatory drugs	30	Two or three blocks	5
Moderate, tolerable, sometimes milder, needs occasional tramadol	20	Only indoors	2
Marked, serious	10	Bed and chair	0
Totally disabled	0	**B. Functional activities (14 points)**	
II. FUNCTION (47 points)		**1. Stairs**	
A. Gait (33 points)		Normally.	4
1. Limp		Normally with banister.	2
Non-existent	11	Any method	1
Mild	8	Unable	0
Moderate	5	**2. Shoes and socks**	
Severe	0	Easily	4
Unable to walk	0	With difficulty	2
2. Aid/support		Unable	0
None	11	**3. Sitting**	
Cane for long distances	7	Any chair for an hour	5
Cane always	5	In a high chair for half an hour	3
A crutch	3	Unable to sit comfortably in any chair	0
Two canes	2	**4. Public transport**	
Two crutches	0	Able to use public transport	1
Unable to walk	0	Unable to use public transport	0

proposed by Beaton was used, which included the initial translation by 2 translators; back translation of the 2 independent translators separate from those involved in the initial translation; consensus by experts to obtain a single version and the application of the version obtained.

Although difference was found between the initial application of the Harris scale, and the final one 6 months later, when analysing the results obtained, evaluation of both statistical and clinical significance had to be considered.[13] Singh determined that the threshold to define a minimum and clinically relevant improvement in the modified Harris scale was between 16 and 18 points, whilst to define a moderate improvement it was 40 points.[10] In our analysis a differential mean of 3.63 point was found between the initial application and the final one of the adapted version, and it was therefore considered not to be clinically relevant. Consequently, this cross-cultural adaptation of the Harris scale is consistent over time.

Conclusion

The first translation and cross-cultural adaptation into Spanish of the modified Harris scale (Table 3) was obtained. This

new version has been consistent over time. Its application is recommended mainly in Spain, although it could be used in all Spanish speaking countries which do not yet have an adaptation in keeping with their way of expressing themselves.

Level of evidence

Level of evidence III.

Conflict of interests

The authors have no conflict of interests to declare.

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