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Original article

Translation, cross-cultural adaption and validation of the French version of the Forgotten Joint Score in total hip arthroplasty

Shahnaz Klouche [a,*], Johannes M. Giesinger [b], El-Hadi Sariali [a]

[a] Hôpitaux universitaires La Pitié Salpêtrière-Charles Foix, AP–HP, 75013, Paris, France
[b] Department of psychiatry and psychotherapy, Innsbruck Medical University, 6020 Innsbruck, Austria

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ABSTRACT

Introduction: The ability to "forget" a joint implant in everyday life is considered to be the ultimate objective in arthroplasty. Recently, a scoring system, the Forgotten Joint Score (FJS-12), was published based on a self-administered questionnaire comprising 12 questions assessing how far patients had been able to forget their hip or knee prosthesis. The main objective of the present study was to translate, adapt and assess a French-language version of the FJS-12 in total hip arthroplasty (THA) patients.

Patients and methods: The questionnaire was translated by 2 orthopedic surgeons and a medical physician, all bilingual, then back-translated into English by two native English-speaking translators unacquainted with the original. A concertation meeting adopted a beta-version of this *Score de Hanche Oubliée* (SHO-12), which was then tested on 15 randomly selected THA patients and adapted according to their comments. The final version was validated following the international COSMIN methodology. Data collection was prospective, included all patients operated on by a single surgeon using a single technique. Reference questionnaires comprised Oxford Hip Score (OHS-12) and modified Harris Hip Score (HHS). The 3 assessments were conducted with a minimum 1 year's follow-up. The SHO-12 was administered twice, with a 1-week interval. Statistical tests assessed construct validity (Pearson correlation test), internal coherence (Cronbach alpha), reliability (intraclass correlation coefficient) and feasibility (percentage missing values, administration time and ceiling and floor effects).

Results: Translation/back-translation encountered no particular linguistic problems. Fifty-eight patients (63 THAs) responded to all questionnaires: 22 female, 36 male; mean age, 62.7 ± 15.2 years. Mean follow-up was 1.6 ± 0.4 years. SHO-12 correlated strongly with OHS-12 and HHS. Internal coherence was good (alpha = 0.96) and reproducibility excellent. No floor or ceiling effects were found.

Conclusion: SHO-12, the French-language version of the FJS-12 in THA, is a valid, reproducible self-administered questionnaire, comparable to the English-language version.

Level of evidence: I, Testing of previously developed diagnostic criteria on consecutive patients – Diagnostic study.

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1. Introduction

According to the French Hospital Admissions Information Technical Agency (*Agence Technique de l'Information sur l'Hospitalisation* [ATIH]), nearly 250,000 primary joint prostheses were implanted in France in 2014, more than half of which were hip prostheses (http://www.scansante.fr/). Several studies, with varying lengths of follow-up, demonstrated the benefits of these procedures in terms of pain, motion and function.

These clinical results are now well-established, and patients have further expectations, as shown by the study by Mancuso et al. [1]. In this panel of 405 patients, improved walking ability was the main concern expressed preoperatively (99%), followed by daily life activities outside the home (98%) and daytime (95%) and nighttime pain relief (84%), but also return to sports activity (95%), psychological well-being (93%) and improved sexual activity (65%). Impact on sex life has been little studied by surgeons [2,3] and is not well assessed on present functional scoring systems. When they validated a Dutch-language version of the Oxford Hip Score, Goesens et al. [4] added an extra question: "Do you have problems with your sex life because of your hip?"; more than 50% of patients responded to this item.

Being able to "forget" a joint prosthesis in everyday life can be taken to be the ultimate objective of arthroplasty. Recently, a team reported the Forgotten Joint Score (FJS-12), based on a self-administered questionnaire, comprising 12 questions assessing the extent to which the patient could forget his or her hip or knee prosthesis during various everyday activities [5]; however, it does not assess sexual problems. The FJS has been translated and validated in several languages, for the knee and for the hip [6–10], and for different populations [11]. A French-language version was validated in Belgian knee implant bearers [12].

The main objective of the present study was to translate, adapt and validate a French-language version of the FJS in French patients with total hip arthroplasty (THA). The secondary objective was to assess the interest of an extra question on the ability to forget the prosthesis during sexual activity. The study hypothesis was that this French version is valid, reproducible and comparable to the English-language version.

2. Material and methods

The study had review-board approval. Each participant provided non-refusal.

2.1. Translation and cross-cultural adaptation

The procedure followed international guidelines of cross-cultural adaptation of self-administered questionnaires [13]. With the agreement of the original authors, the questionnaire was translated by native French-speaking two orthopedic specialists and a medical physician. A preliminary version was drawn up in a concertation meeting and back-translated into English by two native English-speaking translators without medical specialization and unacquainted with the original FJS. A harmonization meeting with all those concerned and a methodologist analyzed the various translations and drew up a beta version. Pretesting was performed in a group of patients who had had primary THA for 2 years, selected randomly from a prospective cohort. The beta version was then adapted in the light of their comments, notably regarding general impression and the precision of the words employed. The pretest group of patients did not take part in the subsequent validation study.

2.2. Validity and reproducibility of the final version

The final version of the "*Score de Hanche Oubliée*" (SHO-12) (Fig. 1) was validated following the international COnsensus based Standards for the selection of health status Measurement INstruments (COSMIN) guidelines [14]. A prospective study was conducted from May 2012 to June 2013, including all patients receiving primary THA for osteoarthritis of the hip in our department, operated on by a single surgeon using a single technique. A minimally invasive direct anterior approach was used, with the patient in supine position. Surgery was guided by preoperative 3D CT planning (Hip-Plan® software) [15], analyzing individual anatomy in 3 dimensions, to determine reconstruction objectives and implant sizes (cementless APRIL® acetabular component, and cementless SPS Evolution® stem [Symbios SA, Yverdon, Switzerland]). Patients with history of surgery to the operated hip or refusing to participate were excluded. The reference scales were the modified Harris Hip Score (HHS) [16] and OHS-12 (Oxford Hip Score) [17]. Maximum modified HHS score was 91 points (excellent result); pain was scored on 44 points (no pain) and function on 47 points (excellent). OHS-12 scores vary between 12 (best possible result) and 60 (worst possible results). At a minimum 1 year's follow-up, patients were contacted by telephone to ascertain oral non-refusal and the 3 questionnaires were sent to them

by mail. One week after reception of the completed questionnaires, the SHO-12 was sent a second time, to assess reproducibility.

2.3. Forgotten Hip Score

The original FJS-12 included the main daily life activities expected after joint replacement, as identified on analysis of the literature, expert opinion and patients' opinions [12]. The questionnaire comprises 12 questions, each on a 5-point Likert scale with boxes to tick ranging from "Never" to "Mostly" and values from 0 to 4. Scores are summed and divided by the number of questions answered, results being invalid in case of more than 4 non-responses. The mean value is then multiplied by 25 then subtracted from 100 points, so that high scores correspond to high levels of forgetting. In the present study, an extra question 12b, "Are you aware of your hip during sexual activity?", was added at the end of the SHO-12 questionnaire but not included in calculating the final score.

2.4. Statistical analysis

Descriptive analyses were reported as mean, standard deviation and percentage. Construct validity was tested between the SHO-12, modified HHS and OHS-12 on Pearson r, assessed as "strong" ($r > 0.5$), "moderate" ($0.5 < r < 0.3$) or "weak" correlation ($0.3 < r < 0.1$) [18]. Internal coherence was assessed on Cronbach alpha, with correlation between items considered "excellent" for $\alpha \geq 0.90$ [19]. Reliability was assessed on test-retest by Pearson correlation coefficient and intra-class correlation coefficient ρ (ICCC) and classified as "excellent" ($\rho > 0.75$), "good" ($0.75 < \rho < 0.40$) or "poor" ($\rho < 0.40$) [20]. Feasibility was assessed by percentage non-response, administration time and floor and ceiling effects corresponding to the number of patients with minimum or maximum scores; according to Terwee et al. [21], beyond 15% there is an inherent problem of content validity in generating items. The significance threshold was set at 0.05. Analyses used XLSTAT software, version 2017.6.

3. Results

3.1. Cross-cultural adaptation

Translation/back-translation encountered no major linguistic problems. The pretest population comprised 15 patients: 7 male, 8 female; mean age, 60.9 ± 11 years (range, 40–80 years). They had no comments to make.

3.2. Patients in SHO-12 validation and value study

The study recruited 93 patients (101 THAs), 58 of whom (63 THAs) completed all the questionnaires: 22 female (24 THAs), 36 male (39 THAs); mean age, 62.7 ± 15.2 years (range, 23.1–89.1 years); mean follow-up, 1.6 ± 0.4 years (range, 1–3.2) years. One patient failed to answer 5 questions and was excluded from analysis.

The mean SHO-12 value was $63.1 \pm 32.2\%$ (range, 0–100%). Scores were better although not significantly in males (67.5 ± 31.7 vs 54.5 ± 31.7; $p = 0.09$), and in under-65 year-olds (65.6 ± 34 vs 60.8 ± 30.7, $p = 0.56$). On average, the activity during which the prosthesis was most forgotten was "… when you are taking a bath/shower?" (0.9 ± 1.5) and least forgotten when "… when you are standing up from a low-sitting position?" (2 ± 1.6).