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RUSSIAN CULTURAL ADAPTATION OF MAIN SHOULDER ASSESSMENT SCORES: ASES, UCLA, CONSTANT SCORE, SST (PART 1). PRELIMINARY STUDY

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SUMMARY

Introduction

For reliable using of the selected surveys in other than originally assigned to the questionnaire, linguistic and cultural circles, it is necessary to perform cultural adaptation, which consists of forward-backward-translation according to the strict guidelines.

Aim

The aim of study was to translate, culturally adapt a Russian version of four main questionnaires to provide a subjective method for the evaluation of shoulder impairment for Russian patients.

Material and methods

Russian version of the questionnaires was adapted from original (English) version

ROSYJSKA ADAPTACJA KULTUROWA FORMULARZY OGÓLNEJ OCENY BARKU Z ZASTOSOWANIEM DO BOLESNEGO BARKU: ASES, UCLA, CONSTANT SCORE, SST (CZĘŚĆ I) BADANIE WSTĘPNE.

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STRESZCZENIE

Wstęp

W celu rzetelnego wykorzystania wybranych ankiet w innych niż pierwotnie przypisanych do kwestionariusza kręgów językowych i kulturowych, konieczne jest przeprowadzenie adaptacji kulturowej, na którą składa się tłumaczenie „dwujęzyczne” zgodnie ze ścisłymi wytycznymi.

Cel

Celem badań było przetłumaczenie, adaptacja kulturowa rosyjskiej wersji czterech głównych kwestionariuszy, aby zapewnić obiektywną metodę ogólnej oceny zaburzeń funkcji barku u pacjentów rosyjskich.

Materiał i metody

Rosyjska wersja kwestionariuszy została zaadaptowana z oryginalnej (angielskiej)

according to the widely used guidelines of Beaton.

Results

Each of the resulting versions has been adjusted to Russian specifics

Conclusions

All the questionnaires translated and analyzed are widely used in many countries to assess the condition of the shoulder joint in patients with painful shoulder. Even so, given the specifics that every individual country possesses, each questionnaire should be adjusted in accordance with the specifics of the country where it is set to be used. What is most useful and efficient is multistage translation, where the resulting versions are analyzed, corrected and synthesized to obtain a version that is best adjusted to the local conditions and the specifics of the target language, as opposed to straightforward language-to-language translation.

Keywords: cultural adaptation, questionnaire, painful shoulder, language-to-language English and Russian translation

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Introduction

Shoulder pain is common in patients with degenerative or inflammatory disorders with 7% prevalence in the population and is one of the most frequent musculoskeletal symptoms after low back and neck pain (Lumine *et al.*, 2004; Feleus *et al.*, 2008; Grevin *et al.*, 2012).

The amount of operative management of shoulder disorders, including arthroscopic shoulder procedures for rotator cuff, instability, adhesive capsulitis, synovitis, biceps tendon disease, subacromion impingement and glenohumeral joint replacement, patient-reported shoulder specific clinical measures increases (Ebrahimzadeh *et al.*, 2015). Furthermore, there are other non-traumatic

wersji zgodnie z powszechnie stosowanymi wytycznymi firmy Beaton.

Wyniki

Każda z powstałych wersji została dostosowana do rosyjskiej specyfiki oceny.

Wnioski

Wszystkie kwestionariusze przetłumaczone i przeanalizowane są szeroko stosowane w wielu krajach w celu oceny funkcjonalnej stawu barkowego u pacjentów z bolesnym ramieniem. Mimo to, biorąc pod uwagę specyfikę każdego kraju, każdy kwestionariusz powinien zostać dostosowany zgodnie ze specyfiką kraju, w którym ma być wykorzystany. Najbardziej przydatne i wydajne jest tłumaczenie wielostopniowe, w którym powstałe wersje są analizowane, korygowane i syntetyzowane w celu uzyskania wersji najlepiej dostosowanej do warunków lokalnych i specyfiki języka docelowego, w przeciwieństwie do prostego tłumaczenia językowego.

Słowa kluczowe: adaptacja kulturowa, kwestionariusz, bolesne ramię, tłumaczenie oceny funkcjonalnej angielskie i rosyjskie

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pathologies that indirectly affect the function of the upper limbs such as neuropathy, radiculopathy, cervical spine disease and tumors. Shoulder evaluation scores are very useful in the process of diagnosing and managing patients who present to their family physician, orthopedic surgeon or physiotherapist with shoulder related problems (Ślęzak *et al.*, 2016). This indicates the importance of patients' self-evaluation regarding their health status and quality of life related to their presenting disease in order to assess treatment efficacy. It is important to choose questionnaires that are valid, reliable and sensitive to clinical changes. There are no valid patient-based assessment tools for

the shoulder joint in Russian language. The only questionnaires that cover partially extent of the shoulder joint, and which have an official translation are DASH and Quick-DASH (Disabilities of the Arm, Shoulder and Hand) (<http://www.dash.iwh.on.ca/available-translations>) (Yaghjyan *et al.*, 2005).

More than 40 instruments have been developed for measuring treatment outcomes in shoulder disorders (Harvie *et al.*, 2005; Roe *et al.*, 2013; Wylie *et al.*, 2014). Most of have been developed in English-speaking countries. The self-assessment questionnaires must be readily understood by patients (Ślęzak *et al.*, 2016). The use of questionnaires that are not satisfying the original may give rise to unreliable to tangible results, which could limit the exchange of information among the scientific community. For reliable using of the selected surveys in other than originally assigned to the questionnaire, linguistic and cultural circles, it is necessary to perform cultural adaptation, which consists of forward-backward-translation according to the strict guidelines (Beaton *et al.*, 1996; Beaton *et al.*, 1998; Ślęzak *et al.*, 2016) and validation in clinical conditions of the translated questionnaire (Michener *et al.*, 2002; Neto *et al.* 2013; Gaudelli *et al.* 2014), unfortunately only in a few countries cultural adaptation and validation of the shoulder scores have been made (Table 1) (Ślęzak *et al.*, 2016).

Aim

The aim of study was to translate, culturally adapt a Russian version of four main questionnaires to provide a subjective method for the evaluation of shoulder impairment for Russian patients.

Materials and methods

Translation and cultural adaptation

Russian version of the questionnaires was adapted from original (English) version according to the widely used guidelines of Beaton (Beaton *et al.*, 1996; Beaton *et al.*, 1998). The questionnaires were initially translated

from English into the Russian language by two independent translators whose mother language was Russian. During this process, the translators had the task to transform all the measures into metric system (i. e. pounds to kilograms, yards to meters, gallons and pints to liters). The two translators have different profiles (first- medical and the second a layman in relation to the subject). Then the two translations produced one common translation, with a written report carefully documenting the synthesis process, each of the issues addressed, and how they were resolved. The next stage was completed with this version of the questionnaire. A translator then translated the questionnaire back into the original language totally blind to the original version. This is a process of validity checking to make sure that the translated version is reflecting the same item content as the original versions. The back-translations were produced by two persons with the source language (English) as their mother one. Again, the two translators comprised of a layman and a medical professional. In the fourth stage, a committee (consisting of all the translators, a project manager, a principal investigator, statistician and linguist) compared the two versions, the original and reverse-translated. The documents were analyzed if the translation was not different from the original version, and disagreements discussed to get the final version. A semi-final Russian language version was then created. The last step was testing the questionnaire on a group of 35 people. This investigation was approved by research ethical board. The patients were informed about the study and signed an informed consent. Each patient completed the questionnaire, and was interviewed to probe about what he or she thought was meant by each questionnaire item and the chosen response (Figure 1).

Table 1. The available cultural adaptations of evaluation of forms for painful shoulder.

Questionnaire	Cultural adaptation	
SSI – ASES	Turkish Italian Portuguese Portuguese for Brazilian German Arabic Finnish Polish	Celik <i>et al.</i> 2013 Padua <i>et al.</i> 2010 Angst <i>et al.</i> 2011 Knaut <i>et al.</i> 2010; Puga <i>et al.</i> 2012 Goldhahn <i>et al.</i> 2008 Yahia <i>et al.</i> 2011 Pitulainen <i>et al.</i> 2014 Ślęzak <i>et al.</i> 2016
UCLA	Portuguese for Brazilian Italian Polish	Puga <i>et al.</i> 2012 Marchese <i>et al.</i> 2012 Ślęzak <i>et al.</i> 2016
SST	Lithuania Portuguese for Brazilian Dutch Italian Spanish Persians Polish	Ryliskis <i>et al.</i> 2008 Neto <i>et al.</i> 2013 Lippit <i>et al.</i> 1993 Marchese <i>et al.</i> 2012 Membrilla-Mesa <i>et al.</i> 2015 Naghdi <i>et al.</i> 2015 Ślęzak <i>et al.</i> 2016
CS	Danish French Greek Polish	Ban <i>et al.</i> 2013 Angst <i>et al.</i> 2011 Ntourantonis <i>et al.</i> 2017 Ślęzak <i>et al.</i> 2016

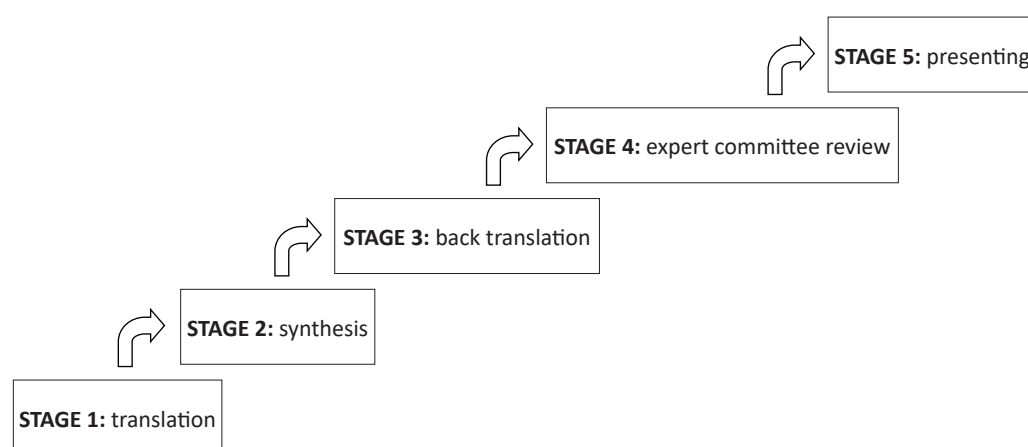


Figure. 1. The steps of translation of a questionnaire.

Questionnaires

The University of California – Los Angeles (UCLA) Shoulder Scale

This scale was first described in 1981. It was one of the first patient-reported outcome measures for the shoulder and, similarly to the Constant–Murley score, it was not validated in first introduction. It was designed for use in shoulder arthroplasty and later used for other shoulder conditions (Amstutz *et al.*, 1981). This scale has been widely used since its inception in 1986.

Its assessment includes points for pain from 1–10 and points for function from 1–10. Additionally, front active flexion of the shoulder is rated 0–5 points, the strength of active flexion is 0–5 points, and patient satisfaction is 0 or 5 points. The strength and range of motion is determined by the examining doctor or physiotherapist while the other parameters are rated by the patient. The highest score healthy patient can achieve is 35 points, any result above 27 points is

recognized as a good/excellent (satisfactory), and a score of below 27 is deemed fair/poor (unsatisfactory) (Ellman *et al.*, 1986; Ślęzak *et al.*, 2016).

The Simple Shoulder Test

The Simple Shoulder Test (STT) was developed by the University of Washington, Department of Orthopedics, Shoulder Team first published in 1992 as a quick, practical and inexpensive patient based and joint specific measurement instrument (Lippitt *et al.*, 1992). It is a self-administered questionnaire designed to document the functional status of a symptomatic shoulder. It consists of 12 'yes' or 'no' questions derived from common shoulder complaints. Each question focuses on shoulder function and a specific activity intolerance. STT was developed and test retest reliability, construct validity, responsiveness of the SST have been studied in several studies (Matsen *et al.*, 1995; Beaton *et al.*, 1996; Beaton *et al.*, 1998; Roddey *et al.*, 2000; Romeo *et al.*, 2004; Godfrey *et al.*, 2007; MacDermid *et al.*, 2006), and the SST proved to be simple and effective tool for measuring the results of treatment.

Shoulder Score Index- American Shoulder and Elbow Surgeons (ASES) Shoulder Outcome Score

The research committee of the SSI-ASES developed this score in 1994 to be applicable to all shoulder diagnoses (Richards *et al.*, 1994; Smith *et al.*, 2012). It consists of a physician-rated and a patient-rated questionnaire. The physician-rated outcomes are not commonly reported. The patient-rated questionnaire is divided into three domains that assess (1) pain, (2) instability, and (3) activities of daily living. For the patient-rated assessment, there are ten questions rated on a 4-point ordinal scale (from 0 to 3) to give a maximum score of 30 points. This score is then converted to a 100-point scale with higher scores indicating better outcome. The survey score, called the Shoulder Score

Index (SSI) is calculated according to the formula $SSI = (10 - [\text{score on the pain scale}]) \times 5 + (5/3 \times [\text{sum of points for daily living activities}])$.

This score was validated in a group of patients with a wide range of shoulder diagnoses, treated both operatively and nonoperatively, who ranged from twenty to eighty-one years of age. An estimation of the minimal clinically important difference and the minimal detectable change was 6.4 ASES points and 9.7 ASES points, respectively (Michener *et al.*, 2002; Smith *et al.*, 2012). Another recent estimate of the minimal clinically important difference for nonoperative treatment of rotator cuff disease was between 12 and 17 ASES points.

The Constant score

The Constant score was devised by C. Constant with the assistance of the Alan Murley during the years 1981–1986. The score was first presented in a university thesis in 1986 and the methodology was published in 1987. This functional assessment score was conceived as a system of assessing the overall value, or functional state, of a normal, a diseased or a treated shoulder. It is composed of objective and subjective sections divided into four subscales, including pain (15 points maximum), activities of daily living (20 points maximum), range of motion [ROM] (40 points maximum) and strength (25 points maximum). The higher the score the higher the quality of function (minimum 0, maximum 100).

The Societe Europeenne pour la Chirurgie de l'Epaule et du Coude /European Society of shoulder and elbow surgery (SECEC/ESSSE) promotes the Constant-Murley score for a comprehensive and comparable assessment of shoulder function. The score is widely used and accepted throughout the European community as a shoulder golden standard for the assessment of shoulder function (Rocourt *et al.*, 2008).

Results

Each of the resulting versions has been adjusted to Russian specifics. Translating The University of California – Los Angeles (UCLA) Shoulder Scale did not present any substantial difficulty. All of the questions therein are well perceived and reproduced.

Translating *The Constant score* posed certain challenges for a translator not specializing in medicine. Specialist medical terms proved difficult to translate accurately (e.g. anatomic landmarks and shoulder joint movements).

The *Shoulder Score Index – American Shoulder and Elbow Surgeons (ASES) Shoulder Outcome Score* proved rather easy to understand, with the exception of the necessity to convert

measurement units into the ones used in Russia (for example, 10lbs. (4.5 kg)), which was also the case with *The Simple Shoulder Test* (pounds to kilograms, yards to meters). Additionally, there were troubles associated with the interpretation of ‘soft ball’ as the game referred to here is not popular in Russia. It was therefore suggested that the questionnaire should refer to a ‘tennis ball’ instead, as the dimensions of the two kinds of balls are relatively comparable.

All Russian-language versions of the questionnaires are provided below.

Оценочный опросник состояния плеч американских хирургов плечевого локтевого суставов SHOULDER ASSESSMENT FOR AMERICAN SHOULDER AND ELBOW SURGEONS

Обведите цифру, которая соответствует степени вашей способности выполнять следующие действия: 0 = не в состоянии; 1 = с большим трудом; 2 = с определенным усилием; 3 = нормально		
ДЕЙСТВИЕ	ЛЕВАЯ РУКА	ПРАВАЯ РУКА
1. Надевание пальто		
2. Сон на боку, соответствующем стороне болезненной или поврежденной конечности		
3. Мытье спины/застегивание бюстгалтера за спиной		
4. Пользование туалетом		
5. Расчесывание/мытье волос		
6. Доставка высоко расположенной полки		
7. Поднимание выше уровня плеча предмета с массой 5 кг		
8. Метание мяча из-за головы		
9. Выполнение обычных обязанностей на работе – перечислить:		
10. Занятия привычными видами спорта – перечислить:		
Боль Оцените свое состояние по приведенной ниже шкале – обведите одно из значений от 0 до 10. Насколько интенсивна сегодня испытываемая вами боль? 0 = боль отсутствует 10 = боль максимальная		
Функция на представленной шкале выберите пожалуйста цифру от 0 до 10, которая отразила бы функцию вашего плеча 0 = мое плечо нефункционально 10 = у меня нормальное плечо 0 ... 1 ... 2 ... 3 ... 4 ... 5 ... 6 ... 7 ... 8 ... 9 ... 10 ...		

Простой тест на состояние плеча

Доминирующая рука	Правая Левая Обе (амбидекстальный)		
Исследуемое плечо	Правое Левое		
1.	Комфортно ли Вашему плечу, когда рука находится в состоянии покоя и вытянута вдоль туловища?	да	нет
2.	Позволяет ли ваше плечо вам комфортно спать?	да	нет
3.	Можете ли вы достать рукой до спины и заправить кофту?	да	нет
Идентификационный номер/ паспортные данные пациента	Ф.И.О	Дата.....	
Сторона.....Прав.....Лев	Тип ЭП.... рев....тот....геми	Всего:	
Сторона.....Прав.....Лев	Тип ЭП.... рев....тот....геми	Всего:	
4.	В состоянии ли вы завести ладонь за голову так, чтобы локоть был обращен строго в сторону?	да	нет
5.	Можете ли вы положить монету на полку на уровне вашего плеча, не сгибая локоть?	да	нет
6.	Можете ли вы поднять 0,5 кг на уровень плеча, не сгибая локоть?	да	нет
7.	Можете ли вы поднять 4,5 кг на уровень вашего плеча, не сгибая локоть?	да	нет
8.	Можете ли вы нести в руке, вытянутой вдоль туловища с пораженным плечевым суставом, груз 10 кг	да	нет
9.	Думаете ли вы, что можете бросить теннисный мяч пораженной рукой движением снизу вверх на 10 метров?	да	нет
10.	Думаете ли вы, что можете бросить мягкий мяч пораженной рукой движением сверху вниз на 20 метров?	да	нет
11.	Можете ли вы помыть спину со стороны противоположного плеча пораженной рукой?	да	нет
12.	Позволяет ли ваше плечо работать полный рабочий день?	да	нет

**Шкала оценки плечевого сустава Университета Калифорнии, Лос – Анджелес
(The University of California – Los Angeles (UCLA) Shoulder Scale)**

ФИО врача ФИО пациента

На протяжении последних 4 недель

1.	Боль	1	постоянная невыносимая; частое обезболивание сильными анальгетиками
		2	постоянная, но терпимая; прием анальгетиков при необходимости
		4	в состоянии покоя боль минимальная или отсутствует; присутствует при легкой степени активности; эпизодически прием салицилатов
		6	при тяжелом или определенном виде активности; частый прием салицилатов
		8	периодическая или слабая
		10	боли нет

2.	Функция	1	рука не используется
		2	возможны только минимальные движения
		4	возможна мелкая работа по дому или большинство манипуляций в повседневной жизни
		6	большая часть домашней работы, покупки, вождение – возможны; способны расчесываться, одеваться/раздеваться, включая застегивание бюстгалтера
		8	только незначительные ограничения; способны выполнять действия при положении руки выше уровня плеч
		10	нормальный уровень повседневной активности
3.	Активное переднее сгибание	5	150
		4	120–150
		3	90–120
		2	45–90
		1	30–45
		0	< 30
4.	Сила переднего сгибания	5	нормально
		4	хорошо
		3	удовлетворительно
		2	плохо
		1	мышечная концентрация
		0	ничего
5.	Удовлетворенность пациента	5	удовлетворен и лучше
		0	не удовлетворен и хуже
Общий балл опросника: Интерпретация: > 27 Хорошо/Отлично < 27 удовлетворительно/плохо Максимальное значение – 35 баллов. Отличные/хорошие отражают удовлетворительный результат, где удовлетворительный/плохой – неудовлетворительный.			

Шкала Константа (Constant Shoulder Score)

ФИО врача ФИО пациента

Ответьте на все вопросы, выбирая только один ответ, если не указано иное

В течение предыдущих 4 недель

Боль	очень сильная	0
	сильная	5
	умеренная	10
	нет боли	15
Уровень активности (выберите подходящий ответ)	здоровый сон	да(2) нет (0)
	полноценный отдых/спорт	да (4) нет (0)
	полноценное выполнение обязанностей на работе	да (4) нет (0)
Уровень, до которого вы можете поднять руку на стороне пораженного сустава	до уровня пояса	2
	до уровня мечевидного отростка	4
	до уровня шеи	6
	до уровня макушки	8
	выше уровня головы	10

Сила отведения (0,5 кг)	-0	0
	-0,5-1,5	2
	-2-3	5
	-3,5-4,5	8
	-5-6	11
	-6,5-7,5	14
	-7,5-9	17
	-9,5-10,5	20
	-11-12	23
	- > 12	25
Объем движений		
Сгибание	-0°-30°	0
	-31°-60°	2
	-61°-90°	4
	-91°-120°	6
	-121°-150°	8
	-151°-180°	10
Отведение	-0°-30°	0
	-31°-60°	2
	-61°-90°	4
	-91°-120°	6
	-121°-150°	8
	-151°-180°	10
Наружная ротация	рука над головой, локоть впереди	2
	рука над головой, локоть сзади	4
	рука на верхушке головы, локоть впереди	6
	рука на верхушке головы, локоть сзади	8
	полное поднятие руки	10
Внутренняя ротация	боковая поверхность бедра	0
	ягодица	2
	пояснично-крестцовое сочленение	4
	поясница (L3)	6
	12 позвонок (T12)	8
	межлопаточная область (T7)	10
Значение шкалы Константа		
Максимальное значение 100 баллов Разница между здоровой и пораженной стороной > 30 – плохо 21-30 – удовлетворительно 11-20 – хорошо..... < 11 – отлично		

Discussion

The versions of the questionnaires that have been obtained as a result of the work done are ready for further use in various research papers and in regular practice. The adaptation algorithm used has already proven to be effective before in other countries. Not only were all questions translated, they were

also thoroughly analyzed with regard to the country's specifics. It was established that translating medical terms accurately is especially important and challenging. Nevertheless, despite all the specifics identified and the adjustments that had to be made, none of the resulting questionnaires caused

substantial misinterpretation. The next step was validation.

Conclusion

All the questionnaires translated and analyzed are widely used in many countries to assess the condition of the shoulder joint in patients with painful shoulder. Even so, given the specifics that every individual country possesses, each questionnaire should be adjusted in accordance with the specifics of the country where it is set to be used. What is most useful and efficient is multistage translation, where the resulting versions are analyzed, corrected and synthesized to obtain a version that is best adjusted to the local conditions and the specifics of the target language, as opposed to straightforward language-to-language translation.

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