RESEARCH RAPORT

POLISH CULTURAL ADAPTATION OF ELBOW ASSESSMENT SCORES: OXFORD ELBOW SCORE, AMERICAN SHOULDER AND ELBOW SURGEONS-ELBOW, MAYO ELBOW PERFORMANCE SCORE AND SUMMARY OUTCOME DETERMINATION QUESTIONNAIRE

POLSKA ADAPTACJA KULTUROWA FORMULARZY OCENY ŁOKCIA: OXFORD ELBOW SCORE, AMERICAN SHOULDER AND ELBOW SURGEONS-ELBOW, MAYO ELBOW PERFORMANCE SCORE ORAZ KWESTIONARIUSZA SUMMARY OUTCOME DETERMINATION.

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ABSTRACT

Introduction
Elbow pain and related problems are commonly seen in doctors’ or physiotherapists’ general practice. Patient-rated questionnaires are a helpful tool in quantifying functional abilities and subjective feelings of patients who struggle with elbow problem. To the authors knowledge up to date there are no Polish versions of questionnaires related to elbow problems.

Aim
The purpose of this study is to translate and adapt four elbow questionnaires to suit Polish patients: Oxford Elbow Score (OES), American Shoulder and Elbow Surgeons-Elbow (ASES-E) and Mayo Elbow Performance Score (MEPS) and Summary Outcome Determination (SOD). This is initial phase and in the next, adapted questionnaires will be validated.

Materials and methods
Cultural adaptation of the selected questionnaires to the Polish culture has been conducted in five stages according to the international guidelines and was supervising by committee. Cultural adaptation process included translating each score from English into Polish, reverse-translation and testing of created version on a group of 30 people.

Results
There have been no major difficulties during cultural adaptation process. The only problem was certain words which had no equivalents in Polish. Testing of the prefinal versions did not bring any objections.

Conclusions
In conclusion, new Polish versions of OES, ASES-E, MEPS and SOD score will be very useful in elbow assessment, in daily practice of doctors and physiotherapists. They will help to unify evaluation of the patients and give a possibility of comparing the results of different treatment methods.
STRESZCZENIE

Wstęp
Ból łokcia i problemy z nim związane są częstym zjawiskiem w pracy lekarzy i fizjoterapeutów. Kwestionariusze subiektywnej oceny są bardzo pomocnym narzędziem w określeniu ograniczeń funkcyjnych oraz odczuć pacjenta zmagającego się z problemem z łokciem. Według wiedzy autorów, dotychczas nie ukazały się polskie wersje kwestionariuszy odnoszących się do stawu łokciowego.

Cel
Celem pracy było przetłumaczenie i adaptacja czterech kwestionariuszy oceny łokcia: „Oxfordzki Kwestionariusz Oceny Łokcia” (OES), „Formularz Oceny Łokcia Amerykańskiego Towarzystwa Chirurgów Barku i Łokcia” (ASES-E), „Kwestionariusz Oceny Łokcia Mayo” (MEPS) i „Ocena Wyników Leczenia” SOD. Jest to wstępna faza pracy, w kolejnym etapie zaadaptowane kwestionariusze zostaną poddane procesowi walidacji.

Materiał i metody
Adaptacja kulturowa wybranych kwestionariuszy została przeprowadzona w pięciu etapach, według międzynarodowych standardów oraz była nadzorowana przez komisję. Proces obejmował: tłumaczenie każdej ankiety z języka angielskiego na język polski, tłumaczenie wsteczne oraz testowanie wstępne na grupie osób.

Wyniki
W procesie adaptacji kulturowej nie pojawiły się większe trudności. Jedynym problemem były słowa, które nie mają bezpośredniego odpowiednika w języku polskim. Testowanie wersji przedfinałowej przebiegło bez zastrzeżeń.

Wnioski
W codziennej praktyce lekarzy i fizjoterapeutów polskie wersje OES, ASES-E, MEPS and SOD będą bardzo przydatne w ocenie łokcia. Pomogą ujednolicić sposób oceny pacjentów oraz umożliwią porównywanie wyników leczenia różnymi metodami.

Słowa kluczowe: polska adaptacja kulturowa, łokieć, OES, ASES-E, MEPS, SOD

Introduction
Elbow pain and related problems are commonly seen in doctors’ or physiotherapists’ general practice. All of the elbow injuries such as elbow dislocations, fractures or their complications, ulnar nerve entrapment or soft tissue disorders are similar, as they all lead to loss of function (Okubo et al., 2019; Sanders et al., 2015; Tandon et al., 2007; Uzunkulaoğlu et al., 2016). Eliminating symptoms, restoring the range of motion and strength are obvious aims for the medical team. However, functional abilities and subjective feelings may be even more valuable for the individual patient. Patient-rated questionnaires are a helpful tool in assessing this. They allow the clinicians to quantify the pain and assess limitations of the joint in performing activities of daily living and sport, thanks to patient subjective evaluation. For the sake of more complete clinical picture, physician – rated questionnaires consist of more detailed and objective information such as range of motion.
symptoms and provocative tests. Moreover, the questionnaires give the clinicians the possibility to monitor the effectiveness of therapy and adjust the rehabilitation process to the demands of a particular patient. Additionally, they allow researchers to compare results of different treatment methods or rehabilitated with different exercise programs. Among numerous existing elbow questionnaires, most are only available in English (Longo et al., 2008). In order to use them properly in other languages, they initially have to be adopted to a given culture to avoid misunderstandings, and then go through a validation process in terms of reliability and sensitivity (Beaton et al., 2000; Guillemin et al., 1993). This process is extremely important for consistent use of each questionnaire in different countries and then for performing cross-national and multi-center studies.

To the authors' knowledge, up to date there are no Polish versions of questionnaires related to elbow problems. We decided to include into the study Oxford Elbow Score (OES), American Shoulder and Elbow Surgeons-Elbow (ASES-E) and Mayo Elbow Performance Score (MEPS) which as a cluster will give the clinician the possibility to assess all of the aspects of elbow injury even the socio-psychological factors. Summary Outcome Determination (SOD) is the new concept of questionnaire. It will allow to assess the outcome of treatment from the new and probably the most important patient's perspective.

The purpose of this study is to translate and adapt four elbow questionnaires to suit Polish patients: OES, ASES-E, MEPS, SOD. This is initial phase and in the next, adapted questionnaires will be validated.

**Materials and methods**

Cultural adaptation of the selected questionnaires to the Polish culture has been conducted in five stages according to the guidelines set forth by Beaton et al. (Beaton et al., 2000) with preservation of the sensitivity of the test described by Guillemin et al. (Guillemin et al., 1993). In the first stage, the original versions of the questionnaires have been translated from English into Polish by two translators: one with medical knowledge (physician) (T1) and second not related to any field of medicine (layman) (T2). Then, in the second stage, both versions have been merged into one (T12). The third stage is a reverse-translation committed by two English native speakers, again one with medical background (B1) and the layman (B2). In the fourth stage, the committee consisting of all translators, language professional, methodologist and health professionals has gathered. The role of the committee was to develop the prefinal version of the questionnaires by a consolidation of all of the five translations (T1, T2, T12, B1, B2). In the fifth stage, prefinal version has been tested on a group of 30 subjects. Each participant has filled out the questionnaire and was asked to mark confusing or incomprehensible phrases, thereafter the doubts as well as the other questions were discussed individually. The written report has been made for each stage.

**Questionnaires**

OES has been established in 2008. It is a specific questionnaire which reflects the quality of life of the patients who struggle with elbow problem from their own perspective (Dawson et al., 2008). Evaluation of the effectiveness of treatment in some cases may differ from a patient and physician point of view (de Haan et al., 2011; Longo et al., 2008). Hence, OES has been created to focus only on a subjective evaluation of elbow condition. It consists of twelve questions related to pain, elbow function and socio-psychological function, four items for each domain. There are five possible answers for each question, scored from 0 to 4, where 0 stands for the most severe symptoms, 4 is a normal state. Maximal amount of points is 48, 16 points from each section. Final score is calculated and ranges from 0 (most severe symptoms) to 100 (normal elbow function) (Guyver et al., 2013; Longo et al., 2008).
ASES-E has been created by The Research Committee of American Shoulder and Elbow Surgeons (King et al., 1999). The questionnaire allows to assess the elbow regardless of given diagnosis. It consists of two main parts: patient self-evaluation and physician assessment. First part, which is fulfilled by the patient, is a subjective evaluation of pain, function of the elbow and satisfaction with surgery. Five out of six questions about the pain describe its level with Visual Analog Scale (VAS) in different situations (John et al., 2010; Longo et al., 2008). Function of the elbow is assessed separately for right and left side with twelve questions. They define any difficulties in performance of activities of daily living. Patient selects the number from 0 (not able to perform) to 3 (no difficulties) in every given activity. The last part is the evaluation of the satisfaction with conducted surgery, again measured with VAS (John et al., 2010; MacDermid, 2001). Score is calculated as summary of five answers about the pain (VAS) and function assessment (50/3 x (average from 12 answers in function section). The total score ranges between 0 and 100 (normal elbow function). The second part of ASES-E is the clinical assessment conducted by a physician. This part was not included in cultural adaptation process because it is the standard procedure of orthopedic examination and it does not require patient's interpretation.

MEPS is one of the most commonly used questionnaire in evaluation of effectiveness of treatment in different elbow joint conditions (Cusick et al., 2014; Longo et al., 2008). It was created by Morrey et al. in 1993 (Morrey 1993). It consists of four parts: pain (max. 45 points), range of motion (max. 20 points), stability (max. 10 points) and ability to perform five activities of daily living (max. 25 points). Pain is defined as ‘none’ (45 points); ‘mild’ (30 points) – patient sometimes takes painkillers, but it is not limiting the performance of activities of daily living; ‘moderate’ (15 points) – the patient regularly takes painkillers, some difficulties in performance of activities of daily lining exist; ‘severe’ (0 points). Range of motion and stability are tested by the physician who conducts the examination. In the last section the examiner gives the patient five points for performing every out of five listed activities. The final score ranges from 5 to 100; total score is considered as ‘excellent’ if it falls between 90–100, ‘good’ between 75–89 ‘fair’ between 60–74, ‘poor’ less than 60 points (Longo et al., 2008; Schneeberger et al., 2014).

SOD score, is a tool used to determine the outcome of an applied treatment from both the patient and physician perspective. It was developed by Shawn W. O’Driscoll in Mayo Clinic (Shukla et al., 2018). Undoubtedly, the biggest advantage of this scoring is that it is not limited only to orthopedic procedures; it can be also applied to any type of treatment, almost in every field of medicine as well. SOD score is comprised of two parts, categorical and single numerical score. Patients do not fulfill the questionnaire on their own, it is a physician who leads the patient throughout this process. The person conducting the examination (MD or PT), asks the patient a set of questions in a given order These questions are available in the aforementioned study. The result of SOD score is the option chosen by both patient and clinician (‘normal’, ‘almost normal’, ‘greatly improved’, ‘improved’, ‘not improved’, ‘worse’, ‘profoundly worse’, ‘as bad as dying’, ‘death’) and the number from numerical score. This scoring has been proven to be a reliable and repeatable tool with strong physician – patient agreement in determining the outcome of shoulder and elbow surgical treatment (Vaichinger et al., 2019).

**Results**

Polish culturally adapted translations with of the selected elbow questionnaires have been depicted on Figures 1–4.

In OES (Fig. 1) the most challenging item was no. 5, in particular the phrase ‘controlling your life’. The answer option ‘Some of the time’ was also vigorously discussed but we decided to choose ‘for some period of time’.

Our team did not have problems with translation of the ASES-E (Fig. 2), but after the
testing of the prefinal version we decided to add some details in a some score’s items. In the section ‘PATIENT SELF-EVALUATION: PAIN’ we have added ‘0’, because there was no such option to choose in the table in spite of the fact that under the table ‘0’ was explained as ‘no pain’. In the section PATIENT SELF-EVALUATION: FUNCTION’ we decided to change ‘function’ on ‘activities of daily living’. In this table below we also have not left ‘right’ and ‘left’, but we added ‘right elbow’ and ‘left elbow’. In ‘PATIENT SELF-EVALUATION: SATISFACTION’ we have changed the question from ‘Are you satisfied with elbow surgery’ to ‘Are you satisfied with the effect of the elbow surgery?’. Translation and initial testing of MEPS (Fig. 3) has been performed without any inconsistencies.

We have decided to add an instruction paragraph for physicians to the SOD score, instructions included in the Shukla et al. study (Fig. 4). After a debate of the committee, we have changed both tables—categorical and numerical. On the left hand side of the categorical table we have added the following descriptions: ‘improvement’ next to ‘normal’, almost normal’, ‘greatly improved’, ‘improved’ and ‘deterioration’ next to ‘worse’, ‘profoundly worse’, ‘as bad as dying’, ‘death’. Every cell has been also separated to each other in the categorical score. In the numerical score we placed each value at height of the corresponding category to make it clearer and easier to fulfill for the clinicians. Translation by itself did not bring major difficulties.

Figure 1. Polish version of OES.
Discussion

The prerequisite for using the questionnaires in research and clinical work, in other language than the original version, is to complete a cultural adaptation and validation process. That is why OES, ASES-E, MEPS and SOD score were translated into Polish. OES, ASES-E and MEPS are widely used in literature (Cusick et al., 2014; Guyver et al., 2013; Matache et al., 2016; McKee et al., 2005; Öztürkmen et al., 2019; Schol et al., 2019; Viveen et al., 2017; Watkins et al., 2018) and our knowledge it is the first one to gather...
and compare the patient’s and physician’s opinion on assessment of the effectiveness of the applied treatment (Shukla et al., 2018; Vaichinger et al., 2019).

Up to date there are no Polish versions of these questionnaires available in literature and to our knowledge no such process was underway. We decided to use the cultural adaptation protocol proposed by Guillemin et al. and Beaton et al., as recommended by the American Academy of Orthopaedic Surgeons’ Outcomes Committee. Among available

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literature we found it the most accurate and detailed in this field. During the whole process our team has been strictly stuck to the rules described by mentioned authors to obtain the most reliable versions of questionnaires as possible.

Cultural adaptation process should not be focused only on direct and accurate translation but should be aimed to adjust the questionnaires to habits and customs of given population. That is why the testing procedure of the prefinal version is essential in obtaining the version which is clear and easy understandable for subjects.

The next stage is the validation of the adopted questionnaires is currently undergoing.

Conclusion
In conclusion, new Polish versions of OES, ASES-E, MEPS and SOD score will be very useful in elbow assessment, in daily practice of doctors and physiotherapists. They will help to unify evaluation of the patients and give a possibility of comparing the results of different treatment methods.

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