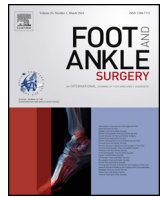




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The Dutch version of the Oxford Ankle and Foot Questionnaire for Children: Useful for evaluation of pediatric foot problems in groups

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ABSTRACT

Background: The purpose of this study is to develop a Dutch version of the Oxford Ankle and Foot Questionnaire for Children (OxAFQ-c) to allow evaluation of pediatric foot care.

Methods: The OxAFQ-c was translated into Dutch, according to the ISPOR-guidelines. Children with different foot and ankle complaints completed the OxAFQ-c at baseline, after two weeks, and after 4–6 months. Measurement properties were assessed in terms of reliability, responsiveness, and construct validity.

Results: Test–retest reliability showed moderate intraclass correlation coefficients. Bland–Altman plots showed wide limits of agreement. After 4–6 months, the group that experienced improvement also showed improved questionnaire outcomes, indicating responsiveness. Moderate correlation between the OxAFQ-c and the Kidscreen and foot-specific VAS-scores were observed, indicating moderate construct validity.

Conclusions: The Dutch OxAFQ-c showed moderate to good measurement properties. However, because we observed limited sensitivity to changes and wide limits of agreement in individual patients, we think the questionnaire should only be used in groups.

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1. Introduction

Health-related quality of life questionnaires and Patient-reported Outcome Measures (PROMs) are of increasing interest in clinical research, allowing the opportunity to assess patients' perspective in clinical care [1]. In contrast to provider-focused assessment methods, such as physical examination and clinician-centered rating scales, PROMs can be used to verify subjective experiences of patients. Currently, a distinction is made between generic PROMs and specific PROMs [1]. Generic PROMs are suitable to measure general aspects of health in a broad population, whereas specific PROMs can be targeted for specific populations, diseases, and body regions [2].

Several region-specific PROMs for foot and ankle problems have been developed [3,4]. Nevertheless, most PROMs for foot and ankle problems are developed and validated for adults [4]. Given the differences between the daily activities of children and adults, these PROMs for adults may be less applicable in children with foot and ankle problems.

In 2008, Morris et al. developed the first questionnaire for children with foot and ankle problems, the Oxford Ankle and Foot Questionnaire for Children (OxAFQ-c) [5–7]. This questionnaire is developed for all foot and ankle problems in children and it measures the effect of foot or ankle problems in three domains: (1) physical, (2) school&play, and (3) emotional. Moreover, an extra question about foot wear is included. The questionnaire contains two versions: the OxAFQ-c for 5–17 year old patients and a parent-proxy version.

Unfortunately, the OxAFQ-c is developed in English and is currently not available in the Dutch language. A Dutch version of the OxAFQ-c will contribute to Dutch pediatric ankle and foot care and will give more insights in the children's and parents' perspective of functioning in daily life. However, translated questionnaires should first be validated, otherwise outcomes could lead to invalid conclusions [8]. A good validation procedure

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consists of the assessment of reliability, validity, and responsiveness, in order to ascertain that the translated questionnaire measures reliable and valid outcomes. In 2015, two validation studies of an Italian and a Danish version of the OxAFQ-c were performed, showing good validity and feasibility [9,10]. In order to obtain a validated Dutch version of the OxAFQ-c, we performed in this study a Dutch translation and validation of the OxAFQ-c.

2. Patients and methods

2.1. Translation

The linguistic translation of the OxAFQ-c contained a forward and backward translation performed according to the ISPOR guidelines for translation [11]. After translation a consensus meeting was planned with the forward translators and principal investigator to establish a first version of the Dutch child and proxy questionnaires. Comprehensibility of these questionnaires was tested at the orthopedic outpatient clinic of the Sophia Children's Hospital. Patients with foot and ankle problems and their parents were asked to complete the translated questionnaire. Comments on difficulties in this translated questionnaire were incorporated in the final version of the Dutch OxAFQ-c.

2.2. Validation process

2.2.1. Patient selection

Prior to the inclusion of patients, the study was approved by the Institutional Review Board of the Erasmus Medical Centre, Rotterdam (MEC-2014-669). Children between the age of 5 and 17 years old with all kinds of foot or ankle complaints and their parents were recruited at the orthopedic outpatient clinic and the orthopedic operation department of the Sophia Children's Hospital, Rotterdam. The included population consisted of patients that were waiting for surgery, were already treated and came for a clinical control appointment, or were newly admitted to the outpatient clinic. Informed consent was signed by parents of children that participated in this study. Children above the age of 12 years old also signed informed consent.

2.2.2. Measurements

All included patients and their parents were asked to complete the OxAFQ-c three times; the first time at the outpatient clinic or before surgery, the second time two weeks after the first questionnaire, and the third time four to six months after the first questionnaire. Two weeks was considered as sufficient time to assume patients could not remember their answers, but also no change in foot complaints occurred. Four to six months was considered as sufficient time to show improvement of the complaints. The second and third questionnaires were sent by mail to all participants. When no response was received, patients were called for a reminder.

The OxAFQ-c is a questionnaire for children with foot and ankle problems and contains 15 questions in four different domains: physical (6 questions), school&play (4 questions), emotional (4 questions), and footwear (1 question) [5]. The questionnaire is available in a child-version and proxy-version. All questions have five answer options, scoring from zero (always) to four (never). Per domain a score can be calculated by dividing the total amount of points by the maximal amount of points in that domain. A high score represents a better outcome [5].

2.2.2.1. Reliability. Reliability is defined by the COSMIN panel as 'the degree to which the measurement is free from measurement error' [8], and was analyzed by test-retest reliability and internal consistency. Test-retest reliability was evaluated by comparing

the first and second scoring of the questionnaire, assuming no difference between foot and ankle function between these two moments. Patients who already received treatment at the second measurement were excluded from analysis. As it is suggested that questionnaires in younger children are less reliable [5], we additionally analyzed the effect of age on measurement error by excluding children below the age of eight. Internal consistency was used to evaluate if each question in one domain measured the same construct. To do so, correlation between questions in every domain was studied, testing for sufficiently strong relations between the items to assume that they measure the same construct.

2.2.2.2. Responsiveness. Responsiveness is defined by the COSMIN panel as 'the ability of an instrument to detect change over time in the construct to be measured' [8]. Therefore, all patients that completed the third OxAFQ-c were also asked if foot complaints became worse, better, or stayed the same compared to the first measurement time. Differences in domain outcomes between the first and third OxAFQ-c were compared between the three complaint groups in order to evaluate if the OxAFQ-c was able to detect change over time in those patients that reported a change.

2.2.2.3. Construct validity. Construct validity is defined by the COSMIN panel as 'the degree to which the scores of a measurement instrument are consistent with hypotheses (regarding internal relationships, relationships with scores of other instruments or differences between relevant groups)' [8]. To test construct validity, seven hypotheses were formulated about the relationship between the OxAFQ-c and two additional questionnaires; the Kidscreen and foot-specific VAS-scores. All questionnaires were completed at baseline.

The Kidscreen is a generic health related quality of life questionnaires, which is validated in the Dutch language [12]. Because the developers have used the 27-item questionnaire for the development of the OxAFQ-c to test construct validity, we chose to use this questionnaire in our validation study. All questions have five answer options, scoring from zero (never) to four (always). According to the questionnaire manual, the domain scores were recalculated in a way that higher scores indicate higher quality of life.

Additionally, four different VAS-scores for foot pain, foot function, foot appearance, and influence of foot complaints on daily life were scored by children and parents. These VAS-scores were included to be able to formulate a sufficient amount of hypotheses to test construct validity [8]. In the VAS, zero was equal to absence of pain, perfect function, maximal satisfaction about appearance, and no problems in daily life, ten was equal to maximal pain, no function, no satisfaction about appearance, and always problems in daily life. The seven hypotheses about the relationship between the OxAFQ-c and the additional questionnaires were:

1. A higher score in the physical domain of the OxAFQ-c correlates with a higher score in the physical domain of the Kidscreen;
2. A higher score in the school&play domain of the OxAFQ-c correlates with a higher score in the peers and social support domain of the Kidscreen;
3. A higher score in the emotional domain of the OxAFQ-c correlates with a higher score in the psychological well-being domain of the Kidscreen;
4. A higher score in the physical domain of the OxAFQ-c correlates with a lower VAS-score on foot function;
5. A higher score in the physical domain of the OxAFQ-c correlates with a lower VAS-score on pain;
6. A higher score in the school&play domain of the OxAFQ-c correlates with a lower VAS-score on daily life;
7. A higher score in the emotional domain of the OxAFQ-c correlates with a lower VAS-score on appearance.

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