



Validity and Reliability of the Gujarati Version of the Kujala Score for Patients with Patello Femoral Pain Syndrome

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ABSTRACT

Patello femoral pain syndrome is one of the most common knee problems in young adolescents group and it affects quality of life. The kujala patello femoral score is a functional evaluation instrument to evaluate knee problems related to patello femoral joint. To check validity and reliability of Gujarati version of the kujala score. An observational study. This was cross sectional observational study to design and develop a Gujarati version of the kujala score by using forward - backward translation protocol. Kujala score questionnaire was applied to 50 participants who came to physiotherapy Department OPD and diagnosed with PFPS. The validity of the kujala questionnaire was assessed by correlating with the Gujarati version of modified WOMAC score. Reliability was measured by assessing the internal consistency, cronbach's alpha coefficient was used to assess internal consistency and spearman's correlation was used to assess test -retest reliability. Mean kujala patello femoral score were at 95% level 64.98 ± 3.492 (range 34 to 82) in test and in retest 65.24 ± 3.487 (range 36 to 82) evaluations respectively and at 99% level 64.98 ± 4.59 in test and in retest 65.24 ± 4.581 . Correlation coefficients of all the items to evaluate test retest reliability of kujala patello femoral score R value is 0.9949 and significance level of 0.05 p value is < 0.00001 . Average Cronbach's alpha for internal consistency was 0.927 and for retest 0.946. Correlation of Gujarati version of mWomac with kujala score Pearson correlation coefficient r value -0.9923. There is unavailability of any reliable and validated functional assessment scale available in Gujarati language for PFPS patients. Internal consistency Gujarati version of the kujala score showed good reliability and test retest results showed high reliability. Its reliable and valid functional instrument for Gujarati patients with patello femoral pain syndrome.

Keywords: Anterior knee pain, patello femoral pain syndrome (PFPS), kujala score, mwomac

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INTRODUCTION

Patello femoral pain is one of the most common types of knee pain in adolescents group. Treatment of patello femoral pain is difficult as many structures involving patello femoral joint biomechanics. Patello femoral pain syndrome is defined as a non traumatic diffuse anterior knee pain aggravated pain by loading knee joint such activity like running, jumping, ascending and descending stairs, squatting.[8] Patello femoral pain syndrome was first described by aleman in 1928[1] It is most common in active females, athletes, and soldiers.[2]

Most of time patello femoral pain treated with under diagnosed cases and both tibiofemoral and patello femoral pain are treated as same in physiotherapy OPD. The etiology and pathogenesis of patello femoral pain syndrome are not clear but several predisposing factors have been proposed.[3] muscular imbalance, ligament injury, trauma, instability, overuse, excessive weight bearing on joint, deficiency, strength or flexibility, congenital patellar anomalies and recurrent intra articular corticosteroids are among common factors responsible for PFP[4]. Symptoms most commonly appear during prolonged sitting with flexed knee especially during travelling, up and down stairs or squatting and localized around knee joint pain can be in the forms of aching, blunt or throbbing.[5] In most of patients development of anterior knee pain is sudden started high intensity exercise and extreme level of sports activity.

MATERIAL AND METHODS

This was observational study of patients with PFPS. The study included 50 patients who were diagnosed as having PFPS in the department of physiotherapy, PDU medical College Rajkot.

The inclusion criteria for patients were patients had anterior knee pain more than 1 month, diagnosed with PFPS age 20 to 40 years, and fluent in Gujarati language. The subjects were taken from diagnosed patients of PFPS referred from orthopedic department, PDU hospital, Rajkot and patients coming for anterior knee pain for physiotherapy department who fulfill inclusion criteria and ready to give consents were taken for study. Patients excluded from study were psychological disorder, neurological disease, unable to understand Gujarati language, not ready to participate in study. Data collection was performed from November 2021 to December 2021. Ethical clearance received for this study.

The kujala patello femoral score also terms as anterior knee pain questionnaire AKPQ developed by kujala et al in [6] includes 13 questions. These questions includes whether there is pain during walking, up and down stairs, limping in walking, running, squatting, jumping, prolonged sitting with knee flexed, swelling and dislocation of patella, amount of atrophy in the quadriceps muscle girth, flexion deficiency with pain. AKPQ is valid and reliable scoring for assessing pain and disability of anterior knee pain.

Process of translation and development of Gujarati version of KUJALA score

Translation of kujala score in Gujarati format was done as per WHO guidelines of translation and adaptation of instrument.

Step 1: Forward translation of the score had been done by two bilingual health care professional that were aware about objectives of the questionnaire. Both professionals have knowledge of English speaking and Gujarati speaking culture and whose mother language is Gujarati. Instructed both translators to emphasize more on conceptual rather than literal in language translations.

Step 2: in this step five health care professional researchers' knowledge of both languages including the original translator, reviewed the translated version to identify and resolve the inadequate expressions or concepts. After suggestions from all experts a translated Gujarati version of questionnaire was ready for backward translation.

Step 3: Non health care professionals who had knowledge of both languages English and Gujarati and not knowledge of concept of the tool performed the backward translation of the Gujarati version questionnaire to English.

Step 4: Before starting study we had checked pretesting of questionnaire, for that questionnaire was performed on 10 samples (5 females and 5 males) age group 20-40 years. The participants were asked to express their understanding and facing any difficulty in understanding. None of the participants have faced any difficulty in filling score and understanding so we approved the final questionnaire for study.

Statistical analysis

The reliability of the translated Gujarati version of kujala score was determined by evaluating the internal consistency and test retest reliability. Internal consistency was measured by determining the cronbach's alpha. Evaluation of test retest reliability was measured by intraclass coefficient (ICC). The test retest procedure was performed 7 days apart. We had used this interval because the clinical symptoms of patients with PFPS do not change in short time of period without any treatment. We had compared Gujarati version KUJALA score with Gujarati version of mwomac score (modified western Ontario and McMaster universities osteoarthritis index) to assess validity. KUJALA score consists of 13 questions that indicate pain and functional disability. Total score is 100. Modified WOMAC score consists of 24 questions and total score is 96. Correlation was conducted by use of Pearson correlation test. We will count score percentage of Gujarati version. For e.g. if one participant mWomac score value for is 42 then $42/96 * 100$ so value is 43.

The kujala patello femoral scoring system			
	Score		score
1. Limp		8. Prolonged sitting with knee flexed	
a) None	5	a) No difficulty	10
b) Slight or periodical	3	b) pain after exercise	5
c) Constant	0	c) constant pain	3
2. Support		d) pain forces to extend knees temporarily	1
a) Full support without pain	5	e) unable	0
b) Painful	3	9. Pain	
c) Weight bearing impossible	0	a) none	10
3. Walking		b) slight and occasional	8
a) Unlimited	5	c) interferes with sleep	6
b) More than 2 km	3	d) occasionally severe	3
c) 1-2 km	2	e) constant and severe	0
d) Unable	0		
4. Stairs		10. swelling	
a) No difficulty	10	a) none	10
b) Slight pain when descending	8	b) after severe exertion	8
c) Pain both when descending and ascending	5	c) after daily activities	6
d) Unable	0	d) every evening	4
5. Squatting		e) constant	0
a) No difficulty	5	11. Abnormal painful kneecap movements	
b) Repeated squatting painful	4	a) none	10
c) Painful each time	3	b) occasionally in sports activities	6
d) Possible with partial weight bearing 2		c) occasionally in daily activities	4
e) Unable	0	d) at least one documented dislocation	2
6. Running		e) more than two dislocations	0
a) No difficulty	10	12. Atrophy of thigh	
b) Pain after more than 2 km	8	a) none	5
c) Slight pain from start	6	b) slight	3
d) Severe pain	3	c) severe	0
e) Unable	0	13. Flexion deficiency	
7. Jumping		a) none	5
a) No difficulty	10	b) slight	3
b) Slight difficulty	7	c) severe	0
c) Constant pain	2		
d) Unable	0		

Figure -1

Fig. 2 Questionnaire in Local Gujarati Language

- ૧) લંગડાવું
 a) નહીં
 b) ક્યારેક
 c) સતત
- ૨) આધાર / ટેકો લેવામાં
 a) દુખાવા વગર પૂરો ટેકો
 b) દુખાવા સાથે
 c) વજન આપવો અશક્ય
- ૩) ચાલવામાં
 a) અમર્યાદિત
 b) ૨ કિ.મી કરતાં વધારે
 c) ૧-૨ કિ.મી
 d) અસમર્થ
- ૪) પગથિયાં / દાદરા વખતે
 a) કોઈ મુશ્કેલી નથી
 b) ઊતરતી વખતે થોડો દુખાવો
 c) ચડતી અને ઊતરતી બંને વખતે દુખાવો
 d) અસમર્થ

- ૫) ઉભડક બેસવામાં
 a) કોઈ મુશ્કેલી નથી
 b) વારંવાર ઉઠ-બેસ કરવામાં દુખાવો
 c) દરેક વખતે દુખાવો
 d) થોડાક ટેકા સાથે જ શક્ય
 e) અસમર્થ
- ૬) દોડવામાં
 a) કોઈ મુશ્કેલી નથી
 b) ૨ કિ.મી પછી દુખાવો
 c) શરૂઆત થી જ થોડો દુખાવો
 d) અસહ્ય દુખાવો
 e) અસમર્થ
- ૭) કુદવામાં
 a) કોઈ મુશ્કેલી નથી
 b) થોડીક મુશ્કેલી સાથે
 c) સતત દુખાવા સાથે
 d) અસમર્થ
- ૮) લાંબા સમય સુધી ઘૂંટણ વાળી ને બેસવામાં
 a) કોઈ મુશ્કેલી નથી
 b) થોડીક વાર બેઠા પછી દુખાવો
 c) સતત દુખાવો
 d) અસહ્ય દુખાવો
 e) અસમર્થ
- ૯) દુખાવો
 a) નથી
 b) થોડીક અને ક્યારેક
 c) ઊંઘ માં તકલીફ કરે
 d) ક્યારેક અસહ્ય દુખાવો
 e) સતત અને અસહ્ય
- ૧૦) સોજો
 a) નથી
 b) વધારે શ્રમ કર્યા પછી
 c) રોજીંદી ક્રિયા કર્યા પછી
 d) દરરોજ સવારે
 e) સતત
- ૧૧) અસામાન્ય પીડાદાયક ઘૂંટણ ની ઢાંકણી ની હિલચાલ (હલનચલન)
 a) નથી
 b) ક્યારેક રમત-ગમત ની ક્રિયાઓમાં
 c) ક્યારેક રોજીંદી ક્રિયાઓમાં
 d) સર્જરિ પછી એકવાર ઢાંકણી છટકી જવી
- e) બે કરતાં વધારે વાર ઢાંકણી છટકી જવી
- ૧૨) થાપા ના સ્નાયુઓ પાતળા (નબળા) પડી જવા
 a) નહીં
 b) થોડાક
 c) વધારે
- ૧૩) ઘૂંટણ વળવામાં તકલીફ
 a) નહીં
 b) થોડીક
 c) વધારે

Demographic characteristics of the participants

Table 1 and 2 Demographic Characteristics of Participants

Characteristic	Mean	SD
Age (years)	30.4	±2.09
BMI(kg/cm ²)	22.78	22.78±2.76

Characteristic	Frequency	Percentage
Gender Male	22	44%
Female	28	56%
Affected side RT	14	28%
LT	18	36%
BOTH	18	36%

RESULTS

The mean body mass index of patients was 22.78 ± 2.78 , range from 17.6 to 28.2. No patients had taken treatment for PFP previously. mean kujala patello femoral score were at 95% level 64.98 ± 3.492 (range 34 to 82) in test and in retest 65.24 ± 3.487 (range 36 to 82) evaluation respectively and at 99% level 64.98 ± 4.59 in test and in retest 65.24 ± 4.581 . All subjects participated in test retest applications of the kujala patello femoral score responded all items. Correlation coefficients of the items to estimate test retest reliability of kujala patello femoral score R value is 0.9949 and significance level of 0.05 p value is < 0.00001 . Average Cronbach's alpha for internal consistency was 0.927 and for retest 0.946 which suggest an excellent inter item correlation of the kujala Gujarati version. Internal reliability and test retest reliability values showed that the kujala patello femoral scoring instrument was understood by the patients. Content validity checked with modified womac Gujarati version with Pearson's correlation test. R value is -0.9923 and r^2 value is 0.9847. Here r value is negative it shows negative correlation with kujala score. More value of kujala score indicates less disability while in mWOMAC score high value indicates less disability. As r value is -0.9923 highly negative correlations with kujala score.

DISCUSSION

Patello femoral pain syndrome, anterior knee pain, is the most common symptom in the fields of sports physiotherapy. Prevalence rate is high in athletes and sports players and active adolescent's people. Pain occurs around anterior and lateral aspect of patello femoral area pain, that most commonly occurs during prolonged sitting, stair up and down stairs, squatting significantly affects quality of life of patients and difficulty in their functional activities. Examination of patello femoral pain syndrome is difficult in clinical practice. The kujala patello femoral score is frequently used assessment scales for patients with PFPS. It was developed by kujala et al [6] 1993. Scale provides information regarding pain as well as functional difficulty in ADL. We have used cronbach's alpha to determine the reliability of a survey instrument and each item correlation are calculated to find out if questions are correlated with each other. We used cronbach's alpha, most of study used this method to determine the internal consistency of the items. It is known that 0.70 or higher values of cronbach's alpha show a good correlations between items. [7] In this study for content validity we compared modified womac Gujarati version Scale developed in march 2020 [9] with kujala score Gujarati version.

Mwomac score consists of 24 questions regarding pain and difficulty in daily living activity like sitting, walking, get out from car, morning stiffness and pain. MWomac (5 point –likert type scale) developed by the center of rheumatic diseases, Pune that has been modified WOMAC to adapt with Indian culture. [11] mWomac is reliable and valid score for osteoarthritis knee patients. [10] Also modified Womac Gujarati score has high reliability and validity with compare to English version of mWomac [9] in mWomac low indicates more disability where in kujala score more score indicates less disability. As per our knowledge there is no availability of any scale in Gujarati language for patello femoral pain syndrome.

CONCLUSION:

The Gujarati version of the anterior knee pain questionnaire (AKPQ) is both valid and reliable. Thus it is applicable to assess PFPS and use as an objective measurement tool in Gujarati speaking PFPS patients. In future researchers could implement the Gujarati version of the Kujala score to conduct an epidemiological study and to find out prevalence rate of PFPS.

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CONFLICTS OF INTEREST:

There are no conflicts of interest.

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