



Assessment Of Knee Pain, Functional Ability, And Quality Of Life In Patients With Oa Of Knee Using Koos Scale

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Abstracts

Arthritis is considered to be one of the debilitating conditions affecting people's occupation. Osteoarthritis is defined as degenerative joint disease, is a group of overlapping distinct diseases, which may have different etiologies but with similar biological, morphologic, and clinical outcomes. Osteoarthritis is the most common joint disease in the adult world worldwide. Its incidence rises with age. Both intrinsic and extrinsic risk factors promote its development. In men aged 60 to 64, the right knee is more commonly affected; in women, the right and left knees are affected with nearly equal frequency. The purpose of this study is to produce information about knee osteoarthritis's effect on a person's life, with this information we want to help occupational therapists and other healthcare professionals to understand better how knee OA affects a person's physical, social and mental side of living. Also, to show that the working population in the specific age group from 45 to 70 generally suffers more due to knee pain in performing activities of daily living and quality of life.

Keywords: Knee Osteoarthritis, Arthritis, Ethology.

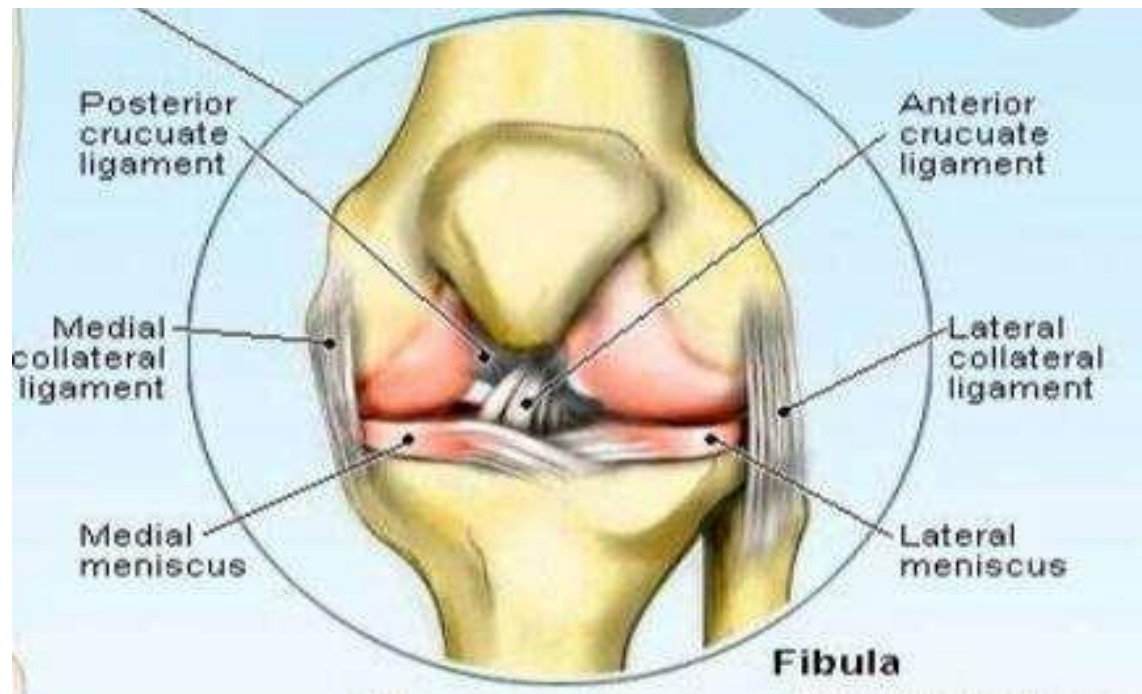
Introduction

Knee Osteoarthritis

Arthritis is considered to be one of the debilitating conditions affecting people's occupation. Osteoarthritis is defined as degenerative joint disease, is a group of overlapping distinct diseases, which may have different etiologies but with similar biological,

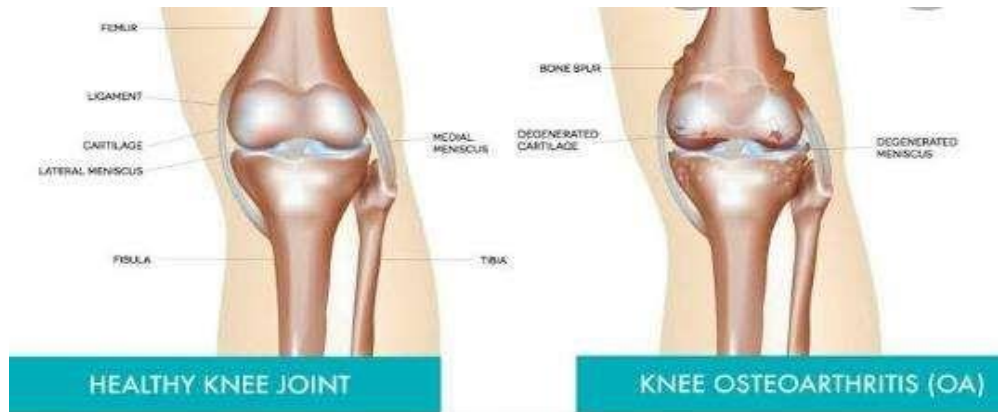
morphologic, and clinical outcomes

Osteoarthritis it involves the degradation of joints, including articular cartilage and subchondral bone. But also, ligaments the capsule and the synovial membrane degenerate.it will lead to pain and function loss.



ETIOLOGY:

Osteoarthritis is the most common joint disease of adult's world worldwide. Its incidence rises with age. Both intrinsic and extrinsic risk factors promote its development. Min men aged 60 to 64, the right knee is more commonly affected; in women, the right and left knees are affected with nearly equal frequency. Acute or chronic insult, including normalwear and tear, age, obesity and joint injury, may imbalance between matrix synthesis and matrix degeneration in cartilage healthy cartilage that promotes chondral loss.



Mechanisms of degeneration are described, followed by descriptions of endogenous and exogenous factors believed to be involved in the progressive course of osteoarthritis Other riskfactors are⁽²⁾

- Obesity
- Joint hypermobility and instability
- Sports stress with high impact loading
- Repetitive knee bending or heavy weight lifting
- Specific occupation
- Peripheral neuropathy
- Injury to knee joint
- History of immobilization
- Family history

CLINICAL FEATURES:

Signs of osteoarthritis are pain while movement, before movement, and permanent pain. The patients show loss of function like stiffness, decreased range of motion, and difficulty in ADL. It is characterized by bony enlargement, crepitus, joint line tenderness, and increased sensitivity. ⁽²⁾

Osteoarthritis subdivides into 5 stages:

- Stage0: normal knee health without any pain in the joint
- Stage1: very minor bone spurs growth and is not experiencing any pain.
- Stage2: pain after long walking and stiffness of the joint and greater bone spur growth.

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Functional Ability, And Quality Of Life In Patients With Oa Of Knee
Using Koos Scale**

- Stage3: frequent pain during movement and more joint stiffness, the space between joints getting smaller.
- Stage4: complete gone of cartilage and synovial fluid decreased and lots of pain and discomfort during walking. ⁽³⁾

To study the people's pain level or how difficult they are facing in their daily living we are using the Knee Injury and Osteoarthritis Outcome Score (KOOS). It intended short and long intervals; to assess changes from week to week induced by treatment.

The purpose of this study is to produce information about knee osteoarthritis's effect on a person's life, with this information we want to help occupational therapists and other healthcare professionals to understand better how knee OA affects a person's physical, social and mental side of living. Also, to show that the working population in the specific age group from 45 to 70 generally suffers more due to knee pain in performing activities of daily living and quality of life.

Aims:-

Assessing knee pain, functional ability, and quality of life in a working population diagnosed with osteoarthritis of the knee using KOOS scale.

Objectives:-

1. To know the effect of knee osteoarthritis on a person's physical, social and mental side of living.
2. To study the effect of OA on pain, functional ability, and quality of life.

Materials and Method:

Study type : It is a Prospective Randomized observational study
STUDY DESIGN:

- NUMBER OF PATIENTS: 30
- STUDY CENTRE: D Y PATIL HOSPITAL
- DURATION: 1 MONTH.

Patient inclusion and Exclusion criteria:- Inclusion

Criteria:-

Pain: present

OA Grade 1, 2, 3

Male and Female both

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Functional Ability, And Quality Of Life In Patients With Oa Of Knee
Using Koos Scale**

Associated Deformity
Occupation : All occupation.
Age: 35yrs -75yrs.

Exclusion Criteria:-

Age: < 35 and >75

Methodology:

KOOS Scale was administered by the therapist on patients who fulfilled the inclusion criteria.

No of patients	KOOS Score
1	79.2
2	25.0
3	11.3
4	10.1
5	17.3
6	45.8
7	19
8	38.1
9	13.8
10	57.4
11	75.7
12	52.7
13	73.7
14	35.8
15	45.3
16	68.5
17	45.9
18	35.7
19	36.9
20	61.9
21	42.9
22	32.1
23	63.1
24	26.2
25	49.4
26	76.2
27	64.2
28	52.7
29	48.2
30	45.8

Mean= $\frac{\text{No. of observations}}{\text{No. of patients}}$

= 43.33

Out of 30 patients

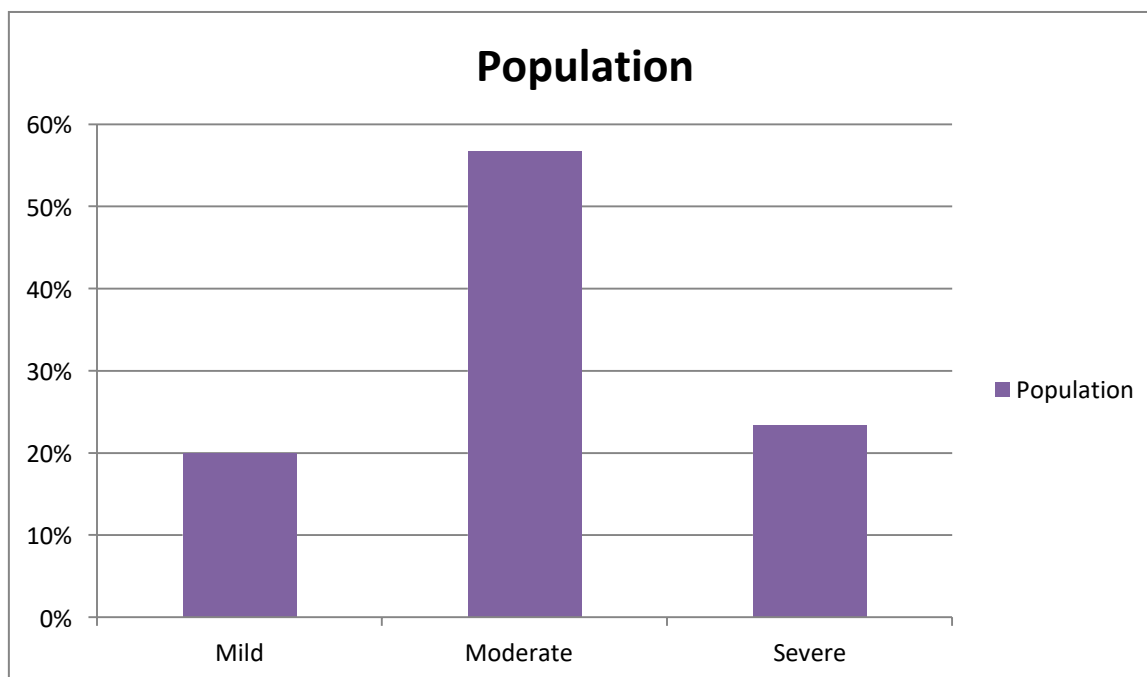
Male: - 5 patients

Female: - 25 patients

Mean score of the overall population with KOOS scale = 43.33

This shows that the Sample population falls under moderate disability on KOOS Scale. Out of all 20 % of patients fall under mild disability.

57.67% of patients fall under moderate disability. 23.33% of patients fall under severe disability.

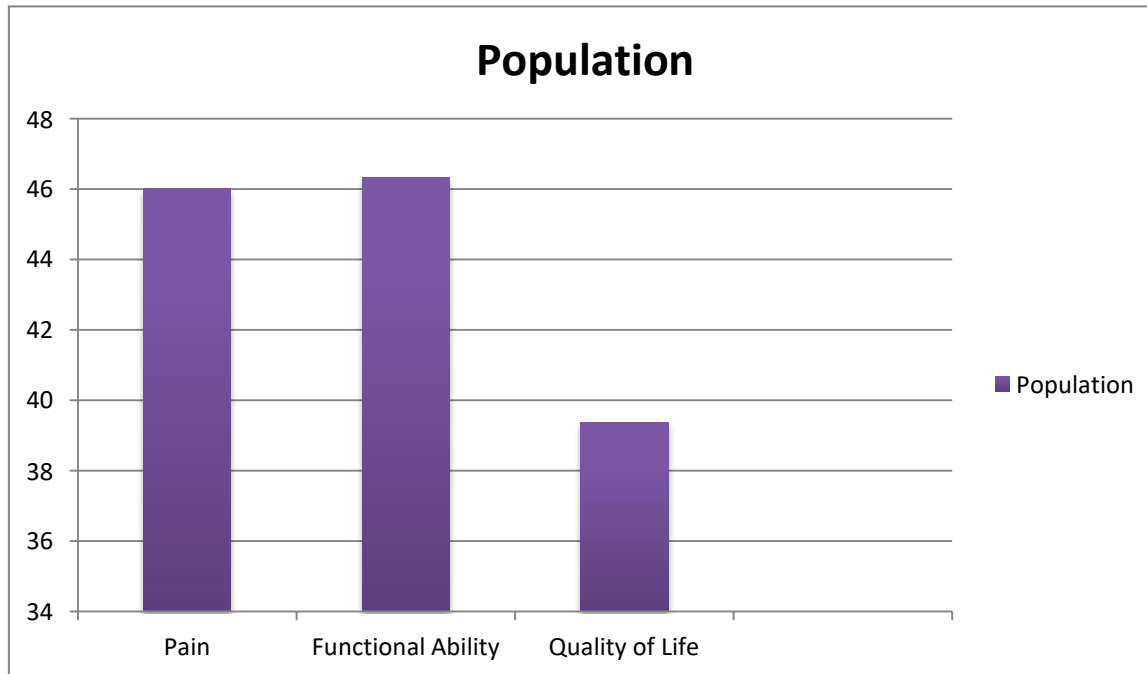


Pain: $1380.56 \div 30 = 46.01$

Functional ability: $1389.84 \div 30 = 46.32$

Quality of life: $1181.25 \div 30 = 39.37$

These categories pain, functional ability, quality of life falls under moderate disability on the basis of KOOS scale.



Discussion:

We have been comparing our results to the reference values of previous studies. This allows us to make some conclusions of our results and see if knee OA affects to people's functional ability and quality of life.

In this study of assessing the knee pain, functional ability, and quality of life in the working population it shows that the working population diagnosed with OA has difficulty in performing their ADL tasks due to the increase in pain.

While interviewing the patients for the preparation of study it has been noticed that Indians make use of the extreme ranges of the knee joint in activities of daily living for example squatting for toilet, cross leg sitting on the floor, household chores, sitting in chair/sofa etc.

These activities thus increase a lot of weight on the knee as already proved in many scientific studies.

1. Vander Zee et al. (1996) published on an article about RAND – 36 and its reliability and validity in a population sample of 1063 inhabitants of Dutch d scores of RAND-36 item for different age groups. According to this study, it is concluded that knee OA affects the quality of Life.
2. According to Vasunilashorn et al. (2009, 227), participants with SPPB scores of 10 or lower at baseline had significantly higher odd for mobility disability at follow-up compared with those who scored 12. Low SPPB score was significantly associated with loss of ability to walk 400 meters after 3 years. Thus, considering the reference value, the decrease in their functional ability can be predicted in 3 years.
3. A study done by Eggermont et al (2009, 769) shows that increased pain sites and pain severity of chronic pain in lower extremities is associated with poorer SPPB performance. Most difficulties considering SPPB were in five repetitive chair stands, which measured leg strength. This may be explained by the fact that standing from the chair requires a lot of strength in the quadriceps femoris muscles, and the strength of the quadriceps, according to O'reilly et al (1998,592), is strongly associated with pain in the knee.

Another, significant fact about the Indian population is that due to high rates of illiteracy there is poor patient education and awareness about the normal biomechanics of body consequently a smaller number of people are being diagnosed and treated in time.

Thus certain modifications, work simplification, joint protection techniques, education, and awareness may help them lead a better life

Conclusion:

There is a strong correlation between parameters like pain, functional ability, quality of life on KOOS Scale in OA patients. Pain is found to be increased, functional ability and quality of life is found to be decreased on KOOS score in patients with OA.

Limitations

1. Large sample size can be considered in further study.
2. Results among grades 1, 2, and 3 OA can be compared with enough sample size.
3. Interventional studies can be performed while comparing pre and post-intervention results on KOOS scores.

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ANNEXURE A

Knee Injury and Osteoarthritis Outcome Score(KOOS)

Patient's name (or ref)

Clinician's name (or ref)

Patient's d.o.b | Jan | 2002

INSTRUCTIONS: This survey asks for your view about your knee. This information will help us keep track of how you feel about your knee and how well you are able to do your usual activities.
Answer every question by ticking the appropriate box. If you are unsure about how to answer a question, please give the best answer you can.

Symptoms - These questions should be answered thinking of your knee symptoms during the last week.

S1. Do you have swelling in your knee?	<input type="radio"/> Never	<input type="radio"/> Rarely	<input type="radio"/> Sometimes	<input type="radio"/> Often	<input type="radio"/> Always
S2. Do you feel grinding, hear clicking or any other type of noise when your knee moves?	<input type="radio"/> Never	<input type="radio"/> Rarely	<input type="radio"/> Sometimes	<input type="radio"/> Often	<input type="radio"/> Always
S3. Does your knee catch or hang up when moving?	<input type="radio"/> Never	<input type="radio"/> Rarely	<input type="radio"/> Sometimes	<input type="radio"/> Often	<input type="radio"/> Always
S4. Can you straighten your knee fully?	<input type="radio"/> Always	<input type="radio"/> Often	<input type="radio"/> Sometimes	<input type="radio"/> Rarely	<input type="radio"/> Never
S5. Can you bend your knee fully?	<input type="radio"/> Always	<input type="radio"/> Often	<input type="radio"/> Sometimes	<input type="radio"/> Rarely	<input type="radio"/> Never

Stiffness - The following questions concern the amount of joint stiffness you have experienced during the last week in your knee. Stiffness is a sensation of restriction or slowness in the ease with which you move your knee joint.

S6. How severe is your knee joint stiffness after first waking in the morning?	<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
S7. How severe is your knee stiffness after sitting, lying or resting later in the day?	<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme

Subtotal: 0

Pain

P1. How often do you experience knee pain?

Never Monthly Weekly Daily Always

What amount of knee pain have you experienced the **last week** during the following activities?

P2. Twisting/pivoting on your knee

None Mild Moderate Severe Extreme

P3. Straightening knee fully

None Mild Moderate Severe Extreme

P4. Bending knee fully

None Mild Moderate Severe Extreme

P5. Walking on flat surface

None Mild Moderate Severe Extreme

P6. Going up or down stairs

None Mild Moderate Severe Extreme

P7. At night while in bed

None Mild Moderate Severe Extreme

P8. Sitting or lying

None Mild Moderate Severe Extreme

P9. Standing upright

None Mild Moderate Severe Extreme

Subtotal:

Function, daily living - The following questions concern your physical function. By this we mean your ability to move around and to look after yourself. For each of the following activities please indicate the degree of difficulty you have experienced in the last week due to your knee.

K1 Descending stairs

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K2 Ascending stairs

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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For each of the following activities please indicate the degree of difficulty you have experienced in the last week due to your knee

K3 Rising from sitting

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K4 Standing

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K5 Bending to lean back up an object

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K6 Walking on flat surface

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K7 Getting in/out of car

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K8 Going shopping

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K9 Putting on socks/stockings

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K10 Rising from bed

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K11 Taking off socks/stockings

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K12 Lying in bed (knee over, maintaining knee position)

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K13 Getting in/out of bath

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K14 Sitting

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K15 Getting on/off toilet

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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For each of the following activities please indicate the degree of difficulty you have experienced in the last week due to your knee

K16 Heavy domestic duties (moving heavy boxes, scrubbing floors, etc)

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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K17 Light domestic duties (cooking, dusting, etc)

<input type="radio"/> None	<input type="radio"/> Mild	<input type="radio"/> Moderate	<input type="radio"/> Severe	<input type="radio"/> Extreme
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Submit:

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Functional Ability, And Quality Of Life In Patients With Oa Of Knee
Using Koos Scale**

Function, sports and recreational activities - The following questions concern your physical function when being active on a higher level. The questions should be answered thinking of what degree of difficulty you have experienced during the last week due to your knee.

SP1. Squatting

None Mild Moderate Severe Extreme

SP2. Running

None Mild Moderate Severe Extreme

SP3. Jumping

None Mild Moderate Severe Extreme

SP4. Twisting/pivoting on your injured knee

None Mild Moderate Severe Extreme

SP5. Kneeling

None Mild Moderate Severe Extreme

Subtotal:

Quality of Life

Q1. How often are you aware of your knee problem?

Never Monthly Weekly Daily Constantly

Q2. Have you modified your life style to avoid potentially damaging activities to your knee?

Not at all Mildly Moderately Severely Totally

Q3. How much are you troubled with lack of confidence in your knee?

Not at all Mildly Moderately Severely Extremely

Q4. In general, how much difficulty do you have with your knee?

None Mild Moderately Severe Extreme

Subtotal:

Thank you very much for completing all the questions in this questionnaire.

To save this data please print or

Knee Injury & Osteoarthritis Outcome Score is

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KOOS: Knee Injury and Osteoarthritis Outcome Score

GENERAL DESCRIPTION: To assess pain, stiffness, and physical function in patient with knee osteoarthritis (OA).

The KOOS consist of 24 items divided into 3 subscales:

1. Pain (5): during walking, using stairs, in bed, sitting or lying, and standing
2. Stiffness (2): after first walking and later in the day
3. Physical function(17): stair use, rising from sitting, standing, bending, walking, getting in/ out of a car, shopping, putting on/ taking off socks, rising from bed, lying in bed, getting in/ out of bath, sitting, getting on/ off toilet, heavy household duties, light household duties.

POPULATIONS:

The KOOS scale was developed for use among patients with OA knee, but it has been used among patients with different conditions, including: low back pain, rheumatoid arthritis, juvenile rheumatoid arthritis, systemic lupus erythematosus, and fibromyalgia.

The KOOS has been extensively used in both observational/epidemiological studies and to examine changes following treatments including pharmacotherapy, arthroplasty, exercise, physical therapy, knee bracing and acupuncture.

METHOD:

Patient report questionnaire can be completed in person, over the telephone, or by computer.

TRAINING: minimal instruction needed. User guide available. TIME

TO ADMINISTER/ COMPLETE: APPROXIMATELY 20 MINS

EQUIPMENT NEEDED: Copy of instrument, ruler, if using Visual Analog Scale.

SCORING:

RESPONSES: The scale uses following descriptors for all items – never, rarely, sometimes, often, always, monthly, weekly, daily, none, mild, moderate, severe, extreme.

- **SCORE RANGE :**

The score is a percentage score from 0 to 100, with 0 representing extreme problems and 100 representing no problems.

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Functional Ability, And Quality Of Life In Patients With Oa Of Knee
Using Koos Scale**

- **INTERPRETATION OF SCORES :**

Lower score on the KOOS scale indicate worse pain, stiffness and functional limitations.

- **METHOD OF SCORING :**

The KOOS is typically scored by hand/computer, using the conventions described above.

- **TIME TO SCORE : 5- 10 Minutes**

- **RELIABILITY AND VALIDITY :**

Internal consistency reliability of KOOS -12 Summary impact score ranged from 0.90 to 0.93 before to 6-12 months after TKR. Convergent and discriminant validity and responsiveness to TKR of the KOOS – 12 Pain, function and Quality of life scales were satisfactory and reached similar conclusions as comparable KOOS scales.