Original Article

Quality of life in patients with total knee replacement - A Cross-Sectional Study

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Abstract:

Background: The study is based on the Quality of life in patients operated with total knee replacement between 50 to 65 years. Total knee replacement is one of the common procedures performed globally and is considered cost-effective with excellent long-term survivorship. Although most patients have a favorable clinical outcome after TKR, several studies have reported that more than 20% of patients are dissatisfied with the outcome after the procedure. Therefore, measuring patients' Quality of life and their perception of the procedure is paramount to improving this procedure and increasing the proportion of patients who have successful outcomes and improved Quality of life. **Methodology:** Patients operated with total knee replacement were included in the study and were screened with inclusion and exclusion criteria. A total of 20 individuals were assessed by using the Oxford knee score questionnaire, and their responses were noted. The result was found by descriptive statistical analysis. **Results:** On analysis using descriptive statistical analysis, the mean score of Oxford Knee Score is 30.95. Hence, the Quality of Life is considered fair in patients at 2 months after total knee replacement. **Conclusion:** From the results, we conclude that Quality of life remains fair in patients at 2 months after being operated with total knee replacement at a tertiary care hospital.

Key words: *Quality of life, Total Knee Replacement, Oxford Knee Score*

Introduction:

Osteoarthritis (OA) a common disease of the aged population and one of the leading causes of disability. The incidence of knee OA is rising by increasing the average age of general population. Age, weight, trauma to joint due to repetitive movements in particular squatting and kneeling, are common risk factors of knee OA. Several factors including cytokines, leptin, and mechanical forces, are pathogenic factors of knee OA. About 13% of women and 10% of men aged 60 years and older have symptomatic knee OA. About 10% of people aged over 55 years have painful disabling knee OA of whom one quarter are severely disabled. The prevalence of knee OA in men is lower than with women. Females, particularly those ≥55 years, tended to have more severe OA in the knee but not in other sites. The results of this study demonstrated sex differences in the incidence of knee OA, particularly after menopausal age. The prevalence of moderate-to-severe knee osteoarthritis changed from 3.7% at the baseline assessment to 26.7% in the follow-up visit eleven years later. Middle-aged women had a high prevalence of moderate-to-severe knee osteoarthritis. The prevalence rates of knee OA vary according to the study population as well as the methods applied for diagnosis.[1]

Common treatments for osteoarthritis involve the use of medications (e.g., nonsteroidal anti-inflammatory drugs). Other treatment approaches involve physical therapy, for example, backward walking on static stability, topical sesame oil, and topical Linum usitatissimum L. (flaxseed) oil. End-stage osteoarthritis, disability, and loss of HQOL all necessitate TKR, which relieves pain, improves long-term function, and restores mobility.[2]

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Although most patients have a favorable clinical outcome after Total Knee Arthroplasty (TKR), several studies have reported that more than 20% of patients are dissatisfied with the outcome after the procedure. This deficiency in patient satisfaction drives research and development in this field. Improving outcomes can be done by changing implant design implantation methods, improving preoperative care for patients, etc. Therefore, measuring patients' Quality of life and their perception of the procedure is of paramount value to improve this procedure and increase the proportion of patients who have successful outcomes and improved Quality of life.[3]

Rates of ongoing knee pain and functional impairment following TKR vary considerably in the literature, ranging from 14% to 44% of individuals reporting persistent pain and from 20% to 50% of individuals reporting functional impairment in the first 12 to 24 months following surgery. Numerous instruments for measuring the outcomes of TKR exist; however, not all of them contain the necessary attributes of a "good" outcome measure. The Oxford Knee Score (OKS) is designed specifically for measuring outcomes in knee replacement. The OKS has also been used to evaluate pharmacological and conservative interventions and other knee surgery procedures in knee osteoarthritis (OA). The OKS is a knee joint-specific 12-item questionnaire originally developed and validated in 1998 for use in randomized controlled trials in total knee replacement. The OKS has 12 items, 5 for assessing pain and 7 for assessing function.[4]

In the case of degenerative knee arthropathy, total knee arthroplasty (TKA) is the preferred therapeutic option for cases of greater severity. This surgical procedure has been documented as very satisfactory with regard to pain relief and restoration of joint function. This has led to greatly increased demand for this procedure, with a consequent strong economic impact.[5]

In patients suffering from OA that does not respond to medical treatment, total knee arthroplasty (TKA) is the most effective surgical procedure to reduce pain, correct the deformity and improve the patient's quality of life. Numerous follow-up studies after TKA reported that several socio-demographic and clinical variables, such as pre-intervention QoL scores, age, gender, obesity, social support, the number of comorbidities and the status of the mental health, may influence the outcome.[6]

Methodology:

This is an observational cross-sectional study with a duration of 6 months. It was carried out in a tertiary care hospital. A total of 20 individuals at 2 months after being operated with Total Knee Replacement were selected for the study using the purposive sampling method. Individuals of either gender between 50 – 65 years of age were included in the study. Individuals having postoperative complications, malignant tumors, psychiatric disorders, or cognitive problems were excluded from the study. For this Oxford knee score was used. The OKS is a knee joint-specific 12-item questionnaire originally developed and validated in 1998 for use in randomized controlled trials in total knee replacement. The OKS has 12 items, 5 for assessing pain and 7 for assessing function.[4]

Procedure:

Approval of the ethical committee was taken. The inclusion and exclusion criteria were followed and prevalence was taken accordingly. Orientation regarding the purpose, procedure and benefits of this study was given to the patients. Patients were contacted personally for their consent of their willingly participation to this project. Then information regarding the questionnaire was given to the patients. Then the questions from the OKS questionnaire were orally converted in their local language and immediately, their responses were noted. Patients were then asked to fill the data collection sheet.

Results:

A total 20 patients operated on Total Knee Replacement participated in this study out of which 10 each were male and female. After analyzing the data, patients were either called up on phone or asked for follow up. Then the scores from the Oxford Knee Score questionnaire were noted and mean score for all the components was calculated.

Table 1. Shows the component wise range of scores and mean score for each component that was noted from the patients. From the above table it is clear that the most affected function was "feeling of knee suddenly giving away or letting you down" as it presented the lowest mean score of 1.8 which was ranged between the scores 1 to 3. Another function which was significantly affected was "difficulty in walking down one flight of stairs" with the mean score of 1.9. It ranged between the scores 1 to 3.

When the mean score of Oxford Knee Score was calculated by analysis using descriptive statistical analysis, it was found to be 30.95 (Table 1). Hence the Quality of life is considered "fair" in rural population at two months after TKR.

Table 1: Questionnaire representing Mean scores of all the patients

Component no.	Description	Range	Mean Score
1	Pain at rest	1 to 4	2.55
2	Trouble while washing and drying yourself because of knee	1 to 4	3.15
3	Trouble while getting in and out of the car or using public transport	1 to 4	2.6
4	Difficulty while walking before the pain at knee becomes severe	0 to 4	2.3
5	Pain while getting up from chair	2 to 4	2.7
6	Limping while walking	1 to 3	2.05
7	Difficulty in kneeling down and getting up again	1 to 4	2.7
8	Pain at knee while in the bed at night	2 to 4	3.35
9	Difficulty in household work because of pain at knee	2 to 4	2.9
10	The feeling of knee suddenly giving away or letting you down	1 to 3	1.8
11	Difficulty in household shopping by your own	2 to 4	2.95
12	Difficulty in walking down one flight of stairs	1 to 3	1.9
Total Mean Score			**30.95**

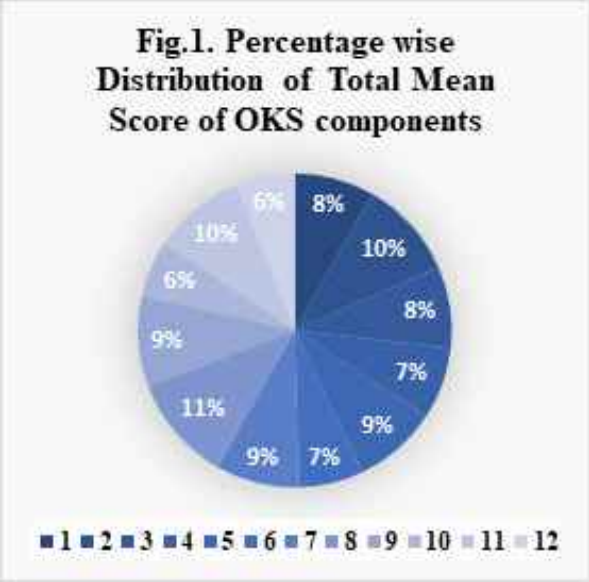

Fig. 1 shows the percentage-wise distribution of all the components which was noted from the patients. The higher percentage denotes less affection of that particular component.

Table 2: represents the different categories of Quality of life based on their Total Oxford Knee Score.

Categories of QOL	Normal Range of Scores	No of patients	Mean Score of patients
Excellent	>41	2	42.5
Good	34-41	4	35.75
Fair	27-33	9	31.11
Poor	<27	5	22.2

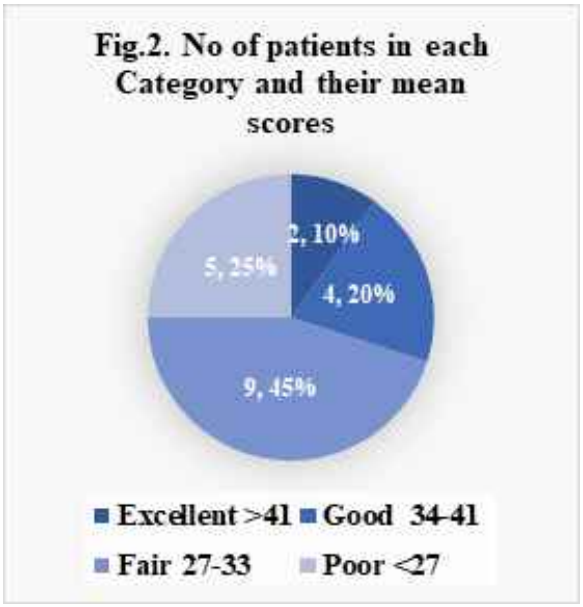

Fig.2 shows the number and percentage of patients in each category of Quality of Life. Where the greatest number of patients i.e., 9 landed in fair category.

Discussion:

Silva R R et al. in 2014 reviewed Quality of life after total knee arthroplasty. It was a systematic review. Various scales used were SF-12/36, OKS, WOMAC, KSS, KOOS, EQ-5D. Euro QoL, omeract, 15D, OAKHQOL, out of which OKS, WOMAC, SF-12/36 being most commonly used. They found out the factors that were directly proportional to the better QOL after TKA which included better dynamic balance, less claudication, better Quality of sleep, physical activity practiced before the procedure, adequate social and familial support and fulfilment of patients' expectations regarding the results from the surgery.[5]

Papakostidou I et.al. in 2012 reviewed Factors affecting the Quality of life after total knee arthroplasties. It was a prospective study & and evaluated QOL after 6 weeks, 3 months, 6 months and 12 months of follow-up. They found that after 6 weeks, patients were less satisfied with their physical function but experienced great improvement in their Quality of life & there was a significant difference in QOL among genders. The lower rate of improvement observed at 6 weeks of follow-up in women may be due to the more severe disability of women and thus the longer periods needed to achieve improvement similar to that of men. The other factors that may affect the Quality of life are age, educational status, rehabilitation facilities, chronic pain and depression.[6]

Canovas F and Dagneaux L in 2018 reviewed the Quality of life after total knee arthroplasty. According to this study pain and stiffness are highly co-related patient satisfaction and Quality of life. They also found that age, gender, excess weight or obesity, patient's psychological status and ethnicity are some of the important factors that affect the QOL in TKR patients. In this study, they discussed about few changes that can be made to improve patients' Quality of life post-operatively. They found that it is important to identify at-risk patients from a psychological or physical point of view so that they can be provided them with personalized information and treatment. Also, the patient's expectation must be clearly evaluated prior to the surgery.[7]

Yap YY et.al. in 2021 reviewed Oxford knee score 1 year after TKR for osteoarthritis with reference to a normative population. This study found out that various factors need to be considered collectively for holistic management of each individual. The patients who are less likely to benefit from TKR could be identified and different treatment options could be fully explored. By providing information to help patients form more realistic expectations of outcomes after surgery, patients could give more informed consent, and potentially increase their satisfaction rate.[8]

Our study evaluated prospectively the QOL after TKA in 20 patients. It demonstrated that QOL remains “fair” in patients of rural population at 2 months after being operated with total replacement. It was found that there was significant improvement in pain at 2 months following the surgery. However, there are few functions which shown very less improvement. The most affected function was “feeling of knee suddenly giving away or letting you down” as it presented the lowest mean score of 1.8 which was ranged between the scores 1 to 3. Another function which was significantly affected was “difficulty in walking down one flight of stairs” with the mean score of 1.9.

The factors which are responsible for the reduced physical function are lack of awareness about physiotherapy treatment, unavailability of the facilities in the rural setup, kinesiophobia and proprioception. In rural setup, mostly good facilities are not available. They are only given basic physiotherapy exercises and which are not monitored.

Though all the studies have shown that Quality of life improves after TKA, no matter what postoperative rehabilitation protocol is used, early rehabilitation (Fast-Track protocols) has become essential. Many rapid recovery protocols focus not only on postoperative rehabilitation but also on preoperative rehabilitation. A study of Quality of life after a rapid recovery protocol showed that patient QOL was similar to that of those who did not undergo TKA after 12 months. This led the authors to conclude that rehabilitation is beneficial for patients who have low Quality-of-life scores preoperatively.[8]

Proprioception serves to protect joints against injurious movement and it is critical to the maintenance of joint stability under dynamic conditions. Therefore, decline in joint position sense after total knee arthroplasty may be a significant risk factor in affecting the physical function.[9] Kinesiophobia i.e., fear of movement or physical activity is a psycho-cognitive factor that can hamper the recovery in patients of TKR. There is a negative influence of kinesiophobia on functional recovery in patients with knee replacement. This was also supported by findings from a large cohort study in which it was demonstrated that kinesiophobia negatively influences the mental state, function and the ability to participate in social activities in patients with TKA.[10]

After TKA surgery, the muscles surrounding the knee and hip become weak, Knee ROM gets reduced, and balance and gait impairments are seen. Hence, physiotherapy is important to improve the knee's range of motion, lower extremity muscle strength, functional performance and independence. In an observational study it was found that there was a significant improvement in knee function among the patients when they used the leg for walking, going up stairs, standing and turning. There is a significant improvement in the parameter of Quality of life of total knee replacement patients who received physiotherapy.[11]

Conclusion:

From results, we conclude that Quality of life remains fair in patients at 2 months after being operated with total knee replacement at tertiary care hospital. The multiple factors responsible for this outcome are poor economic condition, far distance from the hospital, lack of better rehabilitation services.

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Conflict of Interest: None

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