



“A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING EARLY AMBULATION ON TOTAL KNEE REPLACEMENT PATIENTS IN APOLLO SPECIALTY HOSPITALS, JAYANAGAR, BANGALORE (INDIA).”

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Abstract:

Total knee arthroplasty (TKA) results in a high degree of patient satisfaction, as it provides patients with considerable medium- and long-term benefits in terms of quality of life, pain relief and function. Nevertheless, the literature reports that up to 30% of patients are dissatisfied. This dissatisfaction is directly related to the patients' quality of life, which they deem insufficient. Their quality of life depends on many physical, behavioural, social and psychological factors that are not taken into account by functional outcome scores. After describing the principles of quality of life evaluation after TKA, we will assess the effects of patient-related factors, the surgical technique and postoperative program through an exhaustive review of the literature. Patient expectations after TKA will then be outlined, particularly return to work and return to sports¹. Total arthroplasty of the knee to address symptomatic osteoarthritis has become increasingly common as the population ages. Many operative treatment approaches exist and should be attempted before surgical intervention is considered. Surgical alternatives to total knee arthroplasty also exist and may be appropriate. These include osteotomy, unicompartmental arthroplasty, and patellofemoral joint arthroplasty. Though suitable for some patients, these less invasive procedures have reduced survivorship at 10 years when compared with total knee arthroplasty. The primary indication for knee replacement is pain that significantly reduces walking tolerance, impairs ability to perform activities of daily living, and interferes with sleep. Patient-related factors that can affect the success of knee replacement include obesity, comorbidities, and unrealistic expectations for total pain relief and joint function. Absolute contraindications to knee arthroplasty include active knee sepsis and severe untreated or untreatable

peripheral arterial disease. Total knee replacement may be considered for patients of any age once a diagnosis of osteoarthritis is confirmed clinically and radiographically, the patient continues to experience moderate to severe pain and poor quality of life despite an extended course of non-operative treatment, and no contraindications exist. Referral before the patient's disease reaches an extremely advanced stage leads to better outcomes. While usually beneficial, knee arthroplasty is a major surgical procedure with possible complications and risk of failure to provide the desired result. An understanding of the many patient-related factors that can greatly affect outcome and patient satisfaction is essential². Purpose End-stage knee osteoarthritis (OA) results in total knee arthroplasty (TKA) surgery. The decision to perform TKA is not well defined, resulting in variation of indications among orthopaedic surgeons. Non-operative treatment measures are often not extensively used. Aim of this study was to investigate factors influencing the decision to perform TKA by Dutch orthopaedic surgeons. Methods Three case vignettes, each case divided into two versions, being identical except for information on age (younger and older age), pain (mild and severe pain) or radiological OA (low and high grade) were developed. A questionnaire including these three case vignettes was sent to 599 Dutch orthopaedic surgeons, who were randomised to either one of the two versions. The orthopaedic surgeons were asked whether TKA would be the next step in treatment. Furthermore, from a list of patient factors they were asked how strong these factors would influence the decision to perform TKA³. **Materials and Methods:** A Pre-experimental and one group pretest and posttest design was used to assess the knowledge on early ambulation of 50 patients on Total Knee Replacement. A structured questionnaire was developed to assess the knowledge of the patients. The study started with the pretest followed by structured teaching program and post-test. **Results:** The post test showed a significant improvement in the knowledge regarding Early Ambulation of Total Knee Replacement patients. In the pre-test 20 patients had good level of knowledge and 30 had average level of knowledge. The post test revealed that 40 patients had Very good knowledge and 10 had good level of knowledge. Paired t-test value of knowledge and practice was 2.28 and 1.41 respectively, which was higher than the table value 2.72* at $p < 0.05$ hence the structured teaching program was found to be effective in improving the knowledge of the patients. **Conclusion:** Patients acquired knowledge on Total Knee Replacement. And also have an improvement in Physiotherapy, hydration, mobilization and exercise to prevent other complications.

Key words: Structured Teaching material, TKA, TKR,

I. Introduction

Total knee arthroplasty (TKA) or total knee replacement (TKR) are the most common joint replacement procedures. A highly rigorous evaluation of the outcomes after TKA is essential, especially since they are not as clear-cut as those after THA. In the 1990s, scores were introduced to evaluate quality of life and function in addition to the objective data collected by surgeons (pain, mobility, stability, etc.), the complication rate and implant survivorship¹. Total knee Replacement (TKR) is a viable treatment for symptomatic osteoarthritis of the knee refractory to conservative measures. In those with end stage degenerative changes compromising the articular cartilage affecting multiple compartments of the knee, the literature has yet to identify a potentially viable alternative option for the regeneration of cartilage. Thus, TKR has demonstrated reproducible, long term, successful results in such patients concerning outcomes of decreased pain and improved overall quality of life². Recent estimates project that by the year 2030 there will be 3.48 million TKRs performed annually². Although it is an extremely common and increasingly routine surgery, attention to detail is critical during the

procedure to ensure that a well-balanced and functional TKR is performed to mitigate the risks of implanting components that might otherwise be subject to increased wear and early failure. Even with appropriate technique, new technologic advances, and a better understanding of knee kinematics, approximately 1 out of 5 people that undergo a TKR will remain unsatisfied. There are numerous TKR designs and different levels of constraint that may be necessary for particular cases. Uni compartmental arthroplasty, cruciate retaining, and posterior stabilizing implants are typically used as potential index procedure options. However, in patients with significant Varus/valgus instability, those undergoing revision surgery including component revisions, patients with pre-existing poor bone quality or in the setting of appreciable osseous defects, more constrained prosthetic components are given consideration. These include, but are not limited to semi constrained, hinged, or distal femoral replacement options³. A combined effort is required by both the orthopaedic surgeon and the patient in order to obtain an optimal result from your knee replacement procedure. As is the case with all surgical procedures there are certain risks involved. It is important that before deciding to undergo this procedure, the patient have a full understanding of what the operation entails, have reasonable expectations, and a strong commitment to work toward recovery. This booklet will help you understand the operation and recovery⁴. Unicompartmental knee arthroplasty was first introduced in the 1970s, and recent interest in minimally invasive surgical techniques has led to a concurrent resurgence in it. Unicompartmental arthroplasty resurfaces both sides of a single articular compartment, usually the medial, but sometimes the lateral or even patellofemoral. For the medial or lateral compartment, prostheses typically have a metal condylar component and a metal-backed tibial-bearing surface. For patients with isolated unicompartmental osteoarthritis, unicompartmental arthroplasty may be an alternative to high tibial osteotomy or TKA. Adherence to strict surgical indications and appropriate patient selection, combined with meticulous surgical execution, are important factors in outcomes⁵. Various types of arthritis may affect the knee joint. Osteoarthritis, a degenerative joint disease that affects mostly middle-aged and older adults, may cause the breakdown of joint cartilage and adjacent bone in the knees. Rheumatoid arthritis, which causes inflammation of the synovial membrane and results in excessive synovial fluid, can lead to pain and stiffness. Traumatic arthritis, arthritis due to injury, may cause damage to the cartilage of the knee. The goal of knee replacement surgery is to resurface the parts of the knee joint that have been damaged and to relieve knee pain that cannot be controlled by other treatments⁶.

OBJECTIVES OF THE STUDY: To assess the pre-test knowledge regarding early ambulation on Total Knee Replacement. To assess the post-test knowledge regarding early ambulation on Total Knee Replacement. To evaluate the pre-test and post-test knowledge on early ambulation on Total Knee Replacement.

HYPOTHESIS OF THE STUDY: **H1** - There will be a significant difference in pre-test and post-test knowledge scores early ambulation on Total Knee Replacement. **H2**- There will be a significant difference in post-test knowledge scores early ambulation on Total Knee Replacement. **H3** – There will be a significant association between pre-test and post-test knowledge score.

NEED FOR THE STUDY:

Knee replacement surgery is one of the most commonly done and cost-effective musculoskeletal surgical procedures. The numbers of cases done continue to grow worldwide, with substantial variation in utilisation rates across regions and countries. The main indication for surgery remains painful knee osteoarthritis with reduced function and quality of life. The threshold for intervention is not well defined, and is influenced by many factors including patient and surgeon preference. Most patients have a very good clinical outcome after knee replacement, but multiple studies have reported that 20% or more of patients do not. So despite excellent long-term

survivorship, more work is required to enhance this procedure and development is rightly focused on increasing the proportion of patients who have successful pain relief after surgery. Changing implant design has historically been a target for improving outcome, but there is greater recognition that improvements can be achieved by better implantation methods, avoiding complications, and improving perioperative care for patients, such as enhanced recovery programmes. New technologies are likely to advance future knee replacement care further, but their introduction must be regulated and monitored with greater rigour to ensure patient safety⁷.

Total knee arthroplasty (TKA) is one of the most successful interventions to manage pain and dysfunction of the knee joint for end-stage osteoarthritis.^{1–3} As the prevalence of osteoarthritis has increased so have the number of TKAs,⁴ making them one of the most common inpatient surgical procedures covered by Medicare.⁵ Physical rehabilitation is typically offered to patients who have undergone a TKA with the goal of optimizing postoperative outcomes, including strength, physical function, pain reduction, and return to normal activities of daily living. However, rehabilitation is not a single intervention but rather a complex intervention that incorporates multiple specific components (i.e., strength exercises, stretching) that may be initiated at different times after surgery, performed at different frequencies and intensities, delivered by different personnel, delivered in different settings, and may be personalized to individual social and financial circumstances and responses to surgery and rehabilitation.⁶ Thus, while rehabilitation following TKA is generally known to be effective (i.e., compared to no rehabilitation) it is unclear which specific rehabilitation interventions, or components within interventions are most effective and should be replicated in practice to achieve the best clinical outcomes and reduce avoidable complications or joint failures.⁷ Understanding the comparative effectiveness of diverse rehabilitation programs and their component parts is of particular interest to health systems in the context of bundled payment models; as major TKAs and bundled payment models become more prevalent,⁸ health systems and payers would like to understand what are the most effective and cost-effective care for patients receiving TKA without compromising patient outcomes⁸.

A study into total knee replacement (TKR) is needed to investigate patient outcomes, assess the effectiveness of different surgical approaches and rehabilitation programs, understand the impact of patient-specific factors on results, and evaluate the cost-effectiveness and long-term success of TKR. Such research helps improve the quality of life for patients, optimize treatment strategies, and reduce healthcare costs by identifying the most effective and efficient care pathways. Studies are crucial for understanding what makes TKR successful, leading to better pain relief and improved function for patients suffering from severe arthritis. Studies help identify patient-specific characteristics (like obesity, age, or psychological health) that influence outcomes, allowing for more personalized care and risk management. Analysing the cost of TKR in relation to its benefits, especially in the context of increasing prevalence of bundled payment models⁹.

II. Material and Methods

Study Design: Pre-experimental and one group pretest and posttest design. And study conducted at Apollo Speciality Hospitals, Jayanagar, and Bangalore from 05.01.2024 to 05.06.2024. Study conducted for 50 Total Knee Replacement patients. The sample size was collected from the hospitals inpatients among who are all underwent Total Knee Replacement and interested in the study. And Subjects & selection method: **Non-probability sampling** pre-test and posttest method was applied to select the research material.

Inclusion Criteria-Total Knee Replacement patients were included in the study: Those who are: - 1. Able to read, write and understand English. 2. Admitted in the Apollo Speciality Hospital, Jayanagar, Bangalore.3. Total Knee Replacement first day patients. **Exclusion**

Criteria- 1. Not willing to participate in the study.2. Not available at the time of data collection.3. Total Knee Replacement patients having any medical discomfort or any complication.4. Patient age below 75 years, Procedure **methodology:** A structured questionnaire was used to collect data regarding patient's knowledge on Total Knee Replacement. The questionnaire consists of self-declaration for study, Type of surgery. A multiple choice questionnaire used to assess the knowledge. It consists of 10 questions in which each question carries 1 mark. Handwritten questions were given to patients. Questions includes the parameter such as Knowledge on Knee Joint, Osteoarthritis and Surgery. A randomly selected 50 patients under inclusion criteria had done the pre-test for assessing knowledge. A structured Teaching Programme conducted for patients in regards to improve their knowledge on Early ambulation on Total Knee Replacement. Post-test given to the patients to assess knowledge on Early ambulation on Total Knee Replacement had conducted using same questionnaire checklist on the same patients on the same day.

III. Result

After successfully giving information to the patients who participated in the study, their knowledge level has improved by showing difference in the parameters, which is statistically significant. Their knowledge has been improved which is evident in posttest with significant difference in the parameters. Table 1 shows demographic variables with percentage distribution according to (1) Gender, 17 (34%) of them were Male, 33(66%) of them were Female. (2) Age in years, 4 (8%) Patients were to 21-40 Years, 29 (58%) patients were 41-60 years of age and 17 (34%) patients were 61-75 years of age. In regard to the (3) Religion- 15(30%) were Hindu, 22 (44%) were Muslims, 12 (24%) were Christians and 1 (2%) were Jain. (4) Education - 8 (16%) patients were completed PUC, 20 (40%) patients were completed Undergraduate and 22 (44%) patients were completed the Post-graduation. In regard to the (5) Occupation- 3 (6%) patients were doing Govt job, 30(60%) patients were doing Private Job, 17(34%) were doing Business.

Table1 - Demographic variables with percentage distribution

Sl No	Variables	f	%
1	Gender		
	Male	17	34
	Female	33	66
2	Age In Years		
	21-40 years	4	8
	41-60 years	29	58
	61-75 years	17	34
3	Religion		
	Hindu	15	30
	Muslim	22	44
	Christian	12	24
	Jain	1	2
4	Education		

	PUC	8	16
	Undergraduate	20	40
	Post-graduate	22	44
5	Occupation		
	Govt Job	3	6
	Private Job	30	60
	Business	17	34

Table no 2 shows the knowledge level of the Total Knee Replacement patients. In the pretest 30 (60%) patients had average level of knowledge and 20(40%) had Good knowledge. Whereas, in posttest 40(80%) patients had Very Good knowledge and 10(20%) had good level.

Table 2-The level of knowledge in Pretest and Posttest

Level of Knowledge	Very Good		Good		Average	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Pre-test	0	0	20	40%	30	60%
Post-test	40	80%	10	20%	0	0

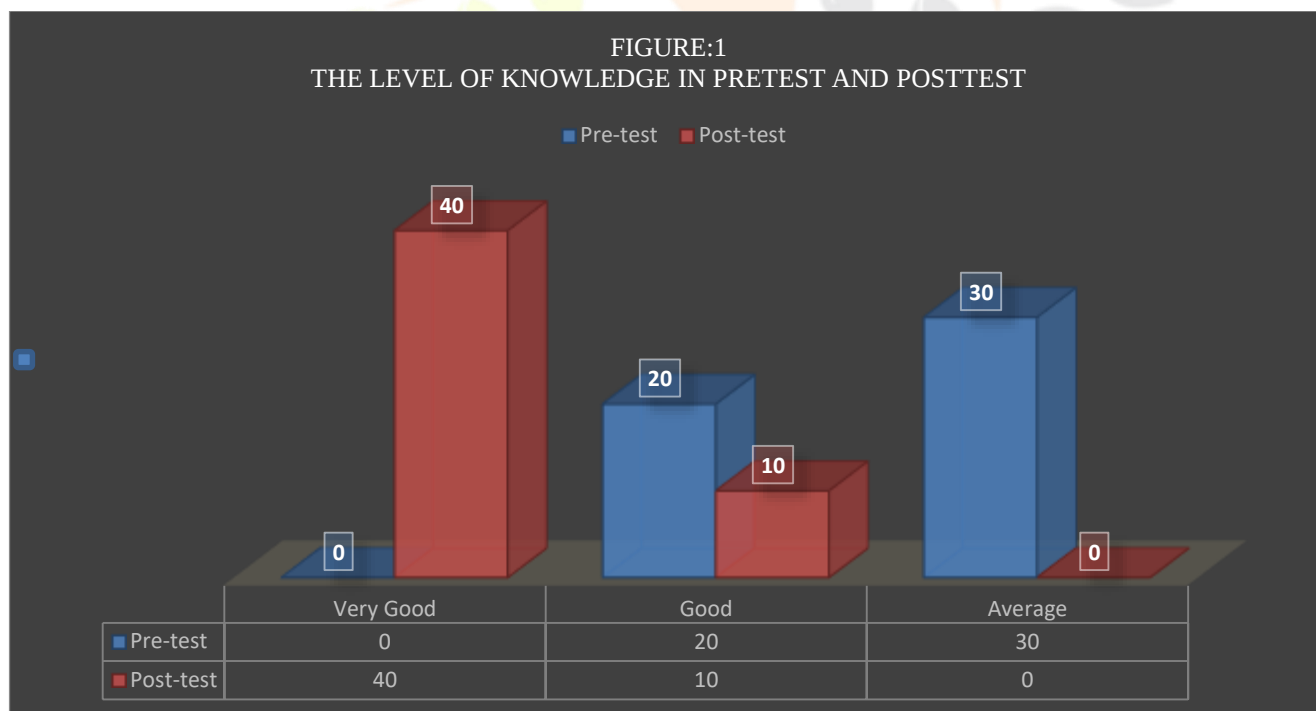


Table no 3 shows Paired t-test value of knowledge was 11.9 and 18.2 respectively, which was higher than the table value 0.699 at $p < 0.05$ hence the structured teaching program was found to be effective in improving the knowledge of the Total Knee Replacement patients.

Knowledge Score	Max score	TKR Patients			Paired 't' test
		Mean $\bar{x}$	Mean Percentage $\bar{x}(\%)$	SD(σ)	2.64
Pre-test	10	6.53	21.79	2.28	
Post-test	10	8.4	28.31	1.41	
Enhancement	10	1.87	6.52		

IV. Discussion

This chapter deals with the discussion, based on the formulated objectives of the study and hypothesis. The study was designed to assess the effectiveness of Structured Teaching Programme on knowledge on early ambulation on Total Knee Replacement patients among patients in Apollo Speciality hospitals, Jayanagar, Bangalore. Eighty-eight percent participants though thought that they had adequate knowledge regarding early ambulation on Total Knee Replacement patients, but most of them were not adhering to education. There is a need of continued education. We believe that the introduction of standardized routines and training, combined with an exchange of the existing paper-based referral management system with an electronic system for managing referrals, could increase safety in the pre analytical process, with positive effects on patient knowledge. Given the importance of exercise in patient care, a more extensive study covering other hospital wards and primary health-care centres is needed.

Most evidence point to the safety and feasibility of conservative treatment (clinical follow-up) of pain tolerance in osteoarthritis in knee joint. However, in cardiac risk of patients and those with pain tolerance of patient, a prophylactic treatment is recommended. To establish these recommendations, more studies with better levels of evidence must be conducted.

V. Conclusion

Not having the knowledge on Total Knee Replacement is a common problems receiving from the inpatient. Hence, the patient's knowledge on differentiation of Osteoarthritis, age factor and osteoporosis, trauma to the knee joint, has improved after implementing a structured teaching programme. Now there is huge reduction related to knowledge gap or miscommunication.

VI. Bibliography

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