The Study to Assess the Effect of Prehabilitation on Postoperative Outcome of the Patients on Total Knee Arthroplasty at Selected Hospital

Dr. S. Tamilselvi[1], D. Nisha[2], M. Janaki[2], R. Radhik[2]

[1]Associate Professor, Saveetha College of Nursing,
Saveetha Institute of Medical and Technical Sciences, Thandalam, Tamil Nadu, India
[2]P.B, B.Sc. Nursing II Year Student, Saveetha College of Nursing, SIMATS, Thandalam, Tamil Nadu, India

ABSTRACT

AIM:
The present study aims to assess the effect of prehabilitation on postoperative outcome of the patients on total knee arthroplasty at selected hospital at SMCH.

METHODS AND MATERIALS:
A pre experimental research design was used for the present study. A total 100 samples were collected using quota sampling technique. The demographic variable and post pre level of knee pain was assessed using structured questioner and, followed by that data was gathered and analyzed.

RESULTS:
The results the study revealed that there is a significant association with post test level of knee pain among patients at level of p<0.0.

CONCLUSION:
Thus, the present study assessed the existing level of knee pain was average and it was evident there is a lack of awareness and knowledge.

KEYWORDS: *Knee, rehabilitation, arthroplasty, postoperative*

INTRODUCTION

Health of the population is wobbling day by day; inhabitants are vulnerable to many health issues according to the age group. Osteoarthritis is the most common joint disease in the world and blert of elderly (1).

Joint pain affects individual is several aspects particularly physical and societal consequences in terms of musculoskeletal pain, disability and socioeconomic costs (2,3).

This degenerative disease which affects the weight bearing part of the joint, so in case of knee OA patients suffer from pain and function impairments that prevent them to participate in activities of daily living (4) and participate in work (5).

The cause of knee pain is quite unknown were obesity, age, genetic may be contributing factor, At the end stage of the disease, usually when patients cannot handle the pain anymore, the sick medical attention after several home based remedies [6].

were knee replacement surgery being the most common and effective treatment to reduce pain and improve functionality.

Total knee replacement, also called total knee arthroplasty (TKA), surgical procedure whereby artificial material is applied to repair the diseased joint [7]

Resurfacing a knee relieves the patient's pain, stiffness and range of motion. Although, mild and infrequent pain has been reported among clients underwent total knee arthroplasty, and 15% suffers from severe pain at 3-4 years after the surgical procedure(8).

Moreover, during the first years after TKA, patients have worse knee function that unpredicted according to the age, recovery depends (9).

Quadriceps strength decreased by 60% and activation decreased 17% after TKA (10).

Were 3 types of prevention, third type is applicable for significant surgery, tertiary prevention, were mild lifestyle modification, rehabilitation, significant exercise can be sorted out secondary complication Together with the age-related loss of muscle mass and the epidemic of obesity, the risk of disability increases, and therefore the surgical procedures are also likely to increase worldwide (11).

Existing evidence regarding the significance of body mass index (BMI) and preoperative exercise (prehabilitation) for patients undergoing total knee arthroplasty are still controversial. However, it was found that the preoperative quadriceps strength is strong predictor of functional performance one year (12) and two years after the TKA (13).

A recent systematic review and meta-analysis suggests that programs provide small-to-moderate improvements that vary by joint (hip or knee) (14).

In patients undergoing knee replacement, preoperative exercise showed better postoperative function, quadriceps strength and shorter length of stay, while not significantly less pain, what was present in the total hip replacement. [15]

Analyzing the studies regarding the rehabilitation period prior to surgical procedure of total knee replacement, we conclude that the preoperative training period typically lasts between 4 to 8 weeks, in some studies also 2 weeks (16).

During this period of time, Fol land et al. proved that muscle strength increases due to neural adaptations rather than hypertrophy (17). thus the current study aims to assess the effect of rehabilitation among clients undergoing total knee arthroplasty

Material and methods
After obtaining and ethical clearance from the institutional ethical committee ofSaveetha institute of medical and technical science and formal permission letter obtained from the head of the SMCH, present study was conducted.

For the present study pre experimental research design was adopted. The data were collected using a quota sampling technique from 100 samples. The inclusion criteria forthe study, participants, who are available during the study period and who are cooperative and who understand both Tamil and English. exclusion criteria for the study are, samples who not willing to participate in the study.

The purpose of the study was explained by the investigator to each of the study participants and a written informed consent was obtained from them. The demographic variable and level of prevalence of iron deficiency was collected from the samples using semi structured questionnaire. the data were analyzed by biostatistics. The sample characteristics were described using frequency and percentage, Chi-square was used to associate the level of prevalence of diabetic with their selected demographic variables

RESULTS AND DISCUSSION
SECTION A: DESCRIPTION OF THE DEMOGRAPHIC VARIABLES OF PATIENTS UNDERGOING TOTAL KNEE REPLACEMENT SURGERY
The result despites that 50% were in the age group of 20-30 years, 57.3 % were males,74.7% were primary schooling, 58% were government employed, 64.7% were Muslims, 65.3% were earning income in range of 11,000-12,000 per month, 62.7% were married, 37.3% were residing at urban setup.

SECTION B: ASSESSMENT OF PRE TEST AND POST-TEST KNEE PAIN

Table 2: Frequency and percentage distribution of pretest and post-test level of obesity
n=150

	Mild		Moderate		Severe	
	No.	%	No.	%	No.	%
Pretest	0	0	96	64.0	54	90.0
Post Test	97	64.7	53	88.33	0	0

The above table 2 shows that in the pretest, 54(90%) had severe knee pain and96(64%) had moderate knee pain. Whereas in the post test, 53(88.33%) had moderateknee pain and77(64.7%) had mild knee pain
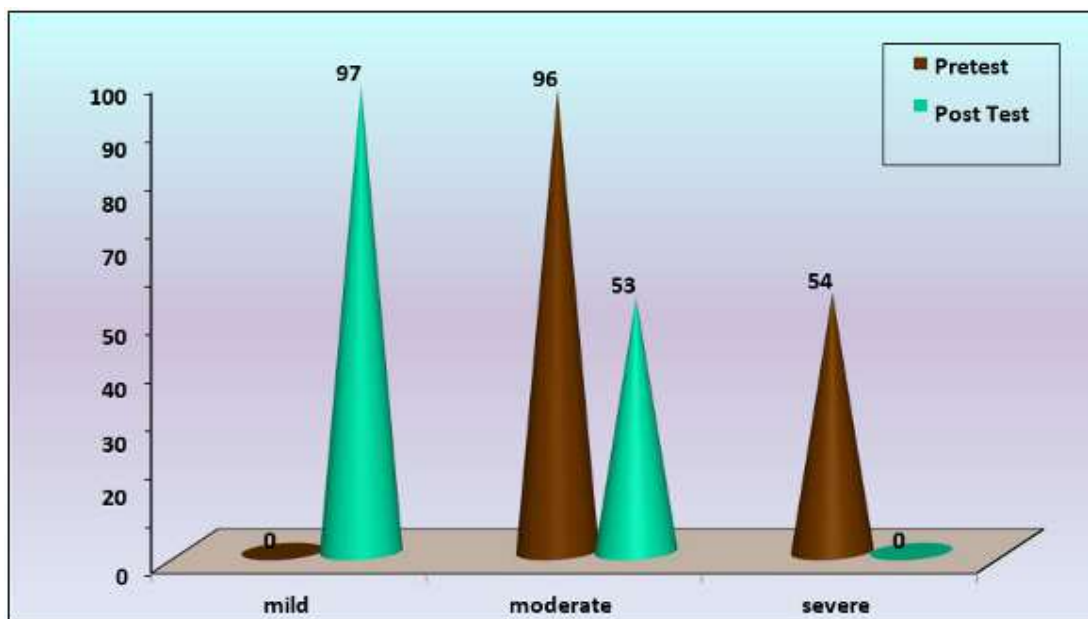
EVALUATE THE EFFECT OF PREHABILITATION ON POST OPREATIVE OUTCOME FOR PATIENTS UNDERGOING TOTAL KNEE ARTHROPLASTY

Table 3: Comparison of pretest and post-test level of knee pain

Variables	Test	Mean	S.D	Paired 't' test Value
Knee pain	Pretest	7.72	2.43	**t = 21.547**
	Post Test	17.85	2.29	**p = 0.0001** **S*****

***p<0.001, S – Significant

The table 3 shows that, the pretest mean score was 7.72±2.43 and the post-test mean score was 17.85±2.29. The calculated paired 't' test value of t=21.547 was found to be statistically highly significant at p<0.001 level. This clearly infers that significant impactof cumin powder intervention among obese women.

SECTION D: ASSOCIATION OF POST-TEST LEVEL OF KNEE PAIN WITH SELECTED DEMOGRAPHIC VARIABLES

The study shows that, demographic variables such as, religion and residency shows significant association with post-test level of knee pain among patients at level of p<0.01

CONCLUSION

From the results of the present study shows significant improvement for research

ACKNOWLEDGEMENT:

Authors would like to appreciate participants for their cooperation to complete thestudy successfully.

Reference

[1] Calatayud J, Casaña J, Ezzatvar Y, et al. High-intensity preoperative training improves physical and functional recovery in the early post-operative periods after total knee arthroplasty: a randomized controlled trial. *Knee Surg Sports Traumatol Arthrosc.* 2017; 25:2864–2872.

[2] Allen KD, Golightly YM. State of the evidence. *Curr Opin Rheumatol.* 2015; 27:276–283.

[3] Glyn-Jones S, Palmer AJR, Agricola R, et al. Osteoarthritis. *The Lancet.* 2015; 386:376–387.

[4] Jones CA, Voak lander DC, Johnston DW, et al. Health related quality of life outcomes after total hip and knee arthroplasties in a community based population. *J Rheumatic.* 2000; 27:1745–1752.

[5] Palmer KT. The older worker with osteoarthritis of the knee. *Br Med Bull.* 2012; 102:79–88.

[6] Wyle V, Hewlett S, Learmonth ID, et al. Persistent pain after joint replacement: prevalence, sensory qualities, and postoperative determinants. *Pain.* 2011; 152:566–572.

[7] Ritter MA, Thong AE, Davis KE, et al. Long-term deterioration of joint evaluation scores. *J Bone Joint Surg Br.* 2004; 86:438–442.

[8] Silva M, Shepherd EF, Jackson WO, et al. Knee strength after total knee arthro- plasty. *J Arthroplasty.* 2003; 18:605–611.

[9] Stevens JE, Mizner RL, Snyder-Mackler L. Quadriceps strength and volitional activation

before and after total knee arthroplasty for osteoarthritis. *J Orthop Res.* 2003; 21:775–779.

[10] Volpi E, Nazemi R, Fujita S. Muscle tissue changes with aging. *Curr Opin Clin Nutr Metab Care.* 2004; 7:405–410.

[11] Mizner RL, Petterson SC, Stevens JE, et al. Preoperative quadriceps strength predicts functional ability one year after total knee arthroplasty. *J Rheumatol.* 2005; 32:1533–1539.

[12] Zeni JA, Snyder-Mackler L. Preoperative predictors of persistent impairments during stair ascent and descent after total knee arthroplasty. *J Bone Joint Surg Am.* 2010; 92:1130–1136

[13] Moyer R, Ikert K, Long K, et al. The Value of Preoperative Exercise and Education for Patients Undergoing Total Hip and Knee Arthroplasty: A Systematic Review and Meta-Analysis. *JBJS Rev.* 2017;5(12)

[14] van Leeuwen DM, de Ruiter CJ, Nolte PA, et al. Preoperative strength training for elderly patients awaiting total knee arthroplasty. *Rehabil Res Pract.* 2014;2014: e462750.

[15] McKay C, Prapavessis H, Doherty T. The effect of a pre- habilitation exercise programon quadriceps strength for patients undergoing total knee arthroplasty: a randomized controlled pilot study. *PM&R.* 2012; 4:647–656.

[16] Rodgers JA, Garvin KL, Walker CW, et al. Preoperative physical therapy in primary total knee arthroplasty. *J Arthroplasty.* 1998; 13:414–421.

[17] Rooks DS, Huang J, Bierbaum BE, et al. Effect of pre- operative exercise on measures of functional status in men and women undergoing total hip and knee arthroplasty. *Arthritis Rheum.* 2006; 55:700–708