

The impact of patient's pre operative characteristics on post operative health status in THR patients

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Abstract

Aim: To observe quality of life in THR patients. **Objectives:** To observe the quality of life before THR To observe quality of life after THR. To compare pre operative and post operative quality of life in THR **Material and Methods:** In this study 50 subjects were included as sample size. List of THR subjects was collected from local super specialty hospital. Subjects were communicated through telecommunication media and survey was done. Two questionnaires that are WOMAC and EQ-5D (VAS) were asked of pre and post health status. **Results:** Before the THR, the mean score of WOMAC was found to be 86.3 and After the THR, the mean score of WOMAC was found to be 39.82 respectively. It also shows extremely significant difference between pre and post scores of WOMAC as the p value is found to be less than 0.05. Before the THR, the mean score of EQ-5D (vas) was found to be 4.18 and After the THR, the mean score of EQ-5D (VAS) was found to be 5.82 respectively. It also shows extremely significant difference between pre and post scores of EQ-5D (VAS) as the p value is found to be less than 0.05. **Conclusion:** As the post operative scores of WOMAC and EQ-5D(VAS) showed significant improvement in the health outcomes, it can be said that the quality of life improves after THR.

Key Words: WOMAC -The Western Ontario and McMaster Universities Osteoarthritis Index Health-related quality of life – HRQoL, Total hip replacement – THR, VAS - Visual Analog Scale.

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INTRODUCTION

One of the most widely performed surgical interventions for advanced arthritis of the hip joint is total hip replacement or total hip arthroplasty. Total hip replacement (THR) is an effective operation that relieves pain and improves function, mobility, and health-related quality of life (HRQoL). A total hip replacement is a surgical procedure whereby the diseased cartilage and

bone of the hip joint is surgically replaced with artificial materials. The normal hip joint is a ball and socket joint. The socket is a "cup-shaped" component of the pelvis called the acetabulum¹ The ball is the head of the thighbone (femur). Total hip joint replacement involves surgical removal of the diseased ball and socket and replacing them with a metal (or ceramic) ball and stem inserted into the femur bone and an artificial plastic (or ceramic) cup socket. The metallic artificial ball and stem are referred to as the "femoral prosthesis" and the plastic cup socket is the "acetabular prosthesis." Upon inserting the prosthesis into the central core of the femur, it is fixed with bony cement called methylmethacrylate.¹ Alternatively, a "cementless" prosthesis is used that has microscopic pores which allow bony in growth from the normal femur into the prosthesis stem. This "cementless" hip is felt to have a longer duration and is considered especially for younger patients. Total hip replacement is also referred to as total hip arthroplasty. Replacement is generally considered after pain becomes so severe that it

impedes normal function despite use of anti-inflammatory and/or pain medications. A total hip joint replacement is usually an elective procedure, which means that it is an option selected among other alternatives and can be scheduled on a routine basis. Patient who had poor preoperative life can be improved after post operation.² It is a decision that is made with an understanding of the potential risks and benefits. The condition of the hip allows it, some doctors will recommend a preoperative exercise program to build muscle and increase flexibility. This can help with recovery. After total hip joint replacement surgery, patients often start physical therapy immediately. On the first day after surgery, it is common to begin some minor physical therapy while sitting in a chair. Eventually, prehabilitation incorporates stepping, walking, and climbing. Initially, supportive devices such as a walker or crutches are used. Pain is monitored while exercise takes place. Some degree of discomfort is normal. It is often very gratifying for the patient to notice, even early on, substantial relief from the preoperative pain for which the total hip replacement was performed Physical therapy is extremely important in the overall outcome of any joint replacement surgery. The goals of physical therapy are to prevent contractures, improve patient education, and strengthen muscles around the hip joint through controlled exercises. Contractures that can cause limitation of joint motion result from scarring of the tissues around the joint. Contractures do not permit full range of motion and therefore impede mobility of the replaced joint. Patients are instructed not to strain the hip joint with heavy lifting or other unusual activities at home. Patients are given home exercise programs to strengthen the muscles around the buttock and thigh. Most patients attend outpatient physical therapy for a period of time while incorporating home exercises regularly into their daily living. However, preoperative physiotherapy and exercise programmes (also known as 'prehabilitation') have been proposed as a potential way to expedite recovery times and improve overall extent of recovery in patients planning to undergo joint replacement^{3,4} Although it seems intuitive that prehabilitation should improve patient disposition at the time of surgery, and may prepare patients for a better recovery after surgery, significant uncertainties remain about the overall balance of benefits and risks (and costs) for prehabilitation. A number of related systematic reviews and meta-analyses have been published in the recent decade, with inconsistent methods and varied conclusions. Two papers suggested that prehabilitation reduced pain for patients undergoing joint replacement, and improved physical function for patients undergoing hip replacement surgery, but not knee

replacement surgery^{3, 4}. Eligible studies had to be randomised controlled trials comparing preoperative prehabilitation programmes (i.e., prescribed and supervised exercises or physiotherapy with or without co interventions such as education, nutritional counselling, acupuncture, transcutaneous electrical nerve stimulation, etc) versus no formal preoperative prehabilitation programmes, reporting at least one clinically-relevant outcome of interest during the postoperative period. Clinical outcomes of interest included postoperative pain scores (Visual Analogue Scale (VAS), or pain subcomponents of Western Ontario and McMaster Universities osteoarthritis index (WOMAC) or pain-related sub domains of other instruments), patient functionality (WOMAC function score, SF-36 physical functioning sub domain or other function-related instruments), time to resume activities of daily living (ADL), quality of life, patient satisfaction, infection, transfusions, stroke and death or overall postoperative complications. One of the most widely performed surgical interventions for advanced arthritis of the hip joint is total hip replacement or total hip arthroplasty. In THR, the damaged bone and cartilage is removed and replace with prosthetic components. Total hip replacement (THR) is an effective operation that relieves pain and improves function, mobility, and health-related quality of life (HRQoL).As hip replacement rates are increasing greatly worldwide, precise advice about health outcomes is essential for patients. Patient's characteristic and preoperative health scores are used to calculate the patient's expected value of THR.As to provide patient and clinician support in day-to-day routines of shared decision making in conducting operation or surgery (THR). The study gives patients information on improvements in health outcomes/status.

MATERIALS AND METHODS

1. Dependent variables were the change in human related quality of life HRQoL scores (EQ-5D)
2. Hip-specific pain and function/mobility scores (WOMAC). The Western Ontario and McMaster Universities Osteoarthritis Index

The Study design used for the study was observational study design. The study was conducted after obtaining approval of the institutional ethical committee (IEC). A total of 50 patients were selected from super speciality was collected considering. 50 participation and their guardian and parents agreed for participation in the study. All the participation and their guardian were briefly explained about the study and informed consent was obtained from them to participate in the study. Patients were distributed in two group A and group B. In one

group patients undergoing for total hip replacement receiving prerehabilitation (pre operative physiotherapy along with post operative physiotherapy) were included and in another group the patients undergoing total hip replacement surgery receiving only post operative physiotherapy were included. 26 participants received physiotherapy preoperative as well as post operative while 24 participants received only post operative physiotherapy treatment. Preoperative condition was asked to patient, post operative condition was asked to patient. Demographic Data was collected and data analysis interpretation was done. In this study 50 subjects were included as sample size. List of THR subjects was collected from local super specialty hospital. Subjects were communicated through telecommunication media and survey was done. Two questionnaires that are WOMAC and EQ-5D (VAS) were asked of pre and post health status. Thus demographic data was collected and respective results were found

Inclusion Criteria: Both men and women were selected Patients recommended for THR. eg OA, RA, AVN, Bone tumours.

Exclusion Criteria: Patient with revision THR. Patient with mechanical complication or infections for major

diagnosis. Total knee replacement as comparative procedure was excluded.

VAS (visual analog scale): Is self completed single unidimensional single item measure of pain intensity in last 24 hours. The response option of the pain intensity were adhere to score “0” represent no pain and score “10” represent worst imaginable pain. The higher the score of VAS indicate greater pain intensity and lower the pain indicate lesser. The reliability scores varies from 0.60 to 0.77 (rho-spearman correlation coefficient values) while validity scores of VAS pain scores from 0.76 to 0.84 (ref Boonstra AM, Int J Prehabilitation Res, 2008 Jun 31(2):165-9)

WOMAC questionnaire is reliable and valid scale to assess pain, stiffness and functional pain in patient with hip or knee osteoarthritis(OA). The womac consist of 24 items divided into 3 subscales: pain (5 items), stiffness (2 items), physical function (17 items). It is available in 5 point Likert-type and 100 mm visual analogue formats. Test-retest reliability was satisfactory with ICC (interclass correlation co-efficient) of 0.86, 0.68 and 0.89 respectively.⁵

OBSERVATIONS AND RESULTS

Table 1: Represents frequency and percentage distribution

Sr. No.	Characteristic	Category	Frequency	Percentage %
1	Age	31-40	5	10
		41-50	10	20
		51-60	13	26
		61-70	11	22
		>70	11	22
2	Gender	Male	15	25
		Female	45	75
3	Physiotherapy	Yes	26	52
		No	24	48

Table 2: Shows comparison between pre and post score of WOMAC

Test	N	Mean	S.D.	t value	p value
Pre test	50	86.3	14.08	18.72	0.000
Post test	50	39.82	15.83		

Table 3: Shows comparison between pre and post score of EQ-5D (VAS)

Test	N	Mean	S.D.	T value	P value
Pre test	50	4.18	1.41	9.22	0.000
Post test	50	5.82	1.45		

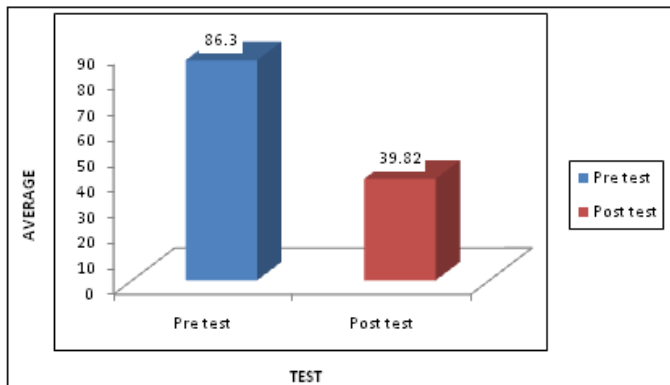


Figure 1: Comparison of Pre vs post WOMAC

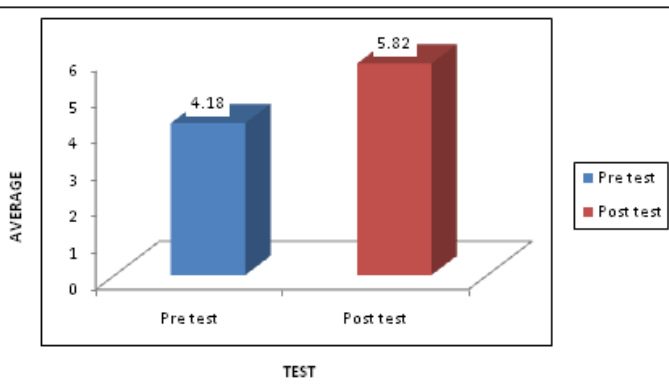


Figure 2: Comparison of Pre vs post EQ-5D (VAS)

Age distribution shows that THR surgeries are largely seen in age group from 51-60 with maximum frequency rate of 13 and is sparsely seen in age group from 31-40yrs with frequency of 5 respectively. The gender distribution graph shows that 75% of females are more prone to THR surgery as compared to males with 25% from total population. 52% of patients from total population received physiotherapy where as 48% of patients didn't receive physiotherapy. Before the THR, the mean score of WOMAC was found to be 86.3 and After the THR, the mean score of WOMAC was found to be 39.82 respectively. It also shows extremely significant difference between pre and post scores of WOMAC as the p value is found to be less than 0.05. Before the THR, the mean score of EQ-5D (vas) was found to be 4.18 and After the THR, the mean score of EQ-5D (VAS) was found to be 5.82 respectively. It also shows extremely significant difference between pre and post scores of EQ-5D (VAS) as the p value is found to be less than 0.05.

DISCUSSION

Total hip replacement (THR) is an effective operation that relieves pain and improves function, mobility, and health-related quality of life (HRQoL) in patients with osteoarthritis and further diagnoses This study contributes to the literature of predictors of postoperative health outcomes after THR and their outcome was mainly related to preoperative^{1,2,3} WOMAC and EQ-5D(VAS)scores. In this study the quality of life of THR patients was assessed by using WOMAC and EQ-5D (VAS). The WOMAC score and the EQ-5D score before operation were the most important predictors of quality of life gains. The poorer the WOMAC score or the EQ-5D score before operation, the higher the patient benefit. According to previous study, a high correlation was found between WOMAC and EQ-5D scores, showing that the WOMAC results of THR patients can explain large parts of HRQoL, and EQ-5D is also a responsive instrument for THR patients. The mean of pre and post EQ-5D score

was found to be 4.18 and 5.82 respectively. The mean of pre and post WOMAC score was found to be 86.3 and 39.82. These results suggest that there is improvement in quality of life of THR patient similar results were found in the previous study which showed significant improvement in WOMAC and HRQoL scores. The improvement was lowest in the group with still acceptable preoperative WOMAC scores (81100) and acceptable preoperative EQ-5D scores (71100). It has been observed that the quality of life in THR patients has improved because of less postoperative pain, faster recovery, decreased risk of hip dislocations, better range of motion and shorter hospital stay Hence Total hip replacements are well accepted as reliable and suitable surgical procedures to improve patients quality of life. Additional information of patients who received physiotherapy treatment is also noted in the study.⁶ Similar to this meta-analysis, most previous meta-analyses and systematic review suggested that the impact of prehabilitation has not been proven by the existing evidence. In contrast to our analysis, Gill and McBurney suggested that exercise-based interventions reduce pain and improve physical function for people awaiting hip replacement surgery, but not that awaiting knee replacement surgery.⁶ It is notable that there were some limitations in the analysis by Gill and McBurney⁶ wherein some included trials did not report if the patients underwent surgery after the intervention, and/or failed to report postoperative outcomes and one included trial allocated patients based on the geographic availability, which may have introduced selection bias and unit of measurement errors. Furthermore, a total of nine relevant trials were not included in Gill (2013).

CONCLUSION

As the post operative scores of WOMAC and EQ-5D(VAS) showed significant improvement in the health

outcomes, it can be said that the quality of life improves after THR.

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