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## Postoperative Psychological Distress in Patients with Total Knee Replacement at Tertiary Care Hospital: A Cross Sectional Survey

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### ABSTRACT

TKR One of the most popular and effective surgical procedures is total knee replacement (TKR), which significantly reduces pain and improves functional impairment in individuals with knee arthritis. A number of psychological issues, such as depression, low self-efficacy, ineffective pain coping mechanisms, somatization, a lack of social support, and patient expectations occurs after a major surgery like TKR. This study aims to determine the level of psychological distress and pain threshold level among post-operative TKR patients. It was a cross sectional study with the sample size of 77. The subjects aged >40 years were enrolled, who had undergone the TKR procedure. After obtaining the informed consent form, the data was collected by filing the NPRS and HADS Performa from the enrolled subjects. Data was analysed via SPSS version 26. The subjects have the mean age of 55.55 with the standard deviation of 11.621. Pearson correlation test was applied to observe the correlation of time duration with NPRS and HADS which showed a negative correlation, interpreting that with the increase in time duration there is decrease in the scores of NPRS and HADS with the P-value of <0.05. There is a decrease in psychological distress with the increase in time duration in patients undergoing total knee replacement surgery. The current study reveals that with time, the level of pain and psychological distress, including anxiety and depression, as well as the pain threshold, decreases in the subjects who undergone through the TKR procedure.

### INTRODUCTION

In 1968, the first knee replacement procedure was carried out. Since then, surgical equipment and methods advancements have significantly boosted its efficacy. One of the most effective medical procedures is TKR (Choi & Ra, 2016; Wylde, Dieppe, Hewlett, & Learmonth, 2007). The treatment of chronic knee pain and disability is thought to be beneficial with (TKR). Based on studies employing patient-based outcome measures, there is growing evidence that a sizable percentage of TKR patients endure chronic knee pain, functional impairment, a low quality of life, and dissatisfaction (Klement *et al.*, 2016).

According to a study done in 2019, 23% of people reported experiencing psychological anguish who were done with TKR. Psychologically distressed patients were younger (P .0001) and more likely to experience depression (Halawi *et al.*, 2019). A cohort study looked into how psychological factors, such as how people perceive their health, anxiety, and depression, affected their recovery and functional outcomes following to TKR surgery. Additionally linked to a higher (worse) knee score at one year were depression and anxiety (Hanusch, O'connor, Ions, Scott, & Gregg, 2014). A meta-analysis examining the relationship between psychological distress before surgery and postoperative pain and function following (TKR). Pain and function following TKR appear to be negatively impacted by re-operative pain catastrophizing, mental anguish, anxiety and/or depressive symptoms, and somatoform disorders. Because of this, some TKR

patients might require psychological assistance to enhance their recovery and quality of life (Sorel, Veltman, Honig, & Poolman, 2019).

Chronic pain following TKR can have an impact on all aspects of quality of life relating to health, and has been linked to functional restrictions, depression, anxiety, worsening general health, sleep issues, and long-term opiate use (Howells, Murray, Wylde, Dieppe, & Blom, 2016). Chronic pain following TKR is best described as pain that is present and bothersome at least three to six months after surgery because the level of pain peaks between three and six months after surgery (Lenguerrand *et al.*, 2016).

The thesis major objective was to better understand patient who had both psychological discomfort and co existing knee arthritis before and after (TKR). Understanding the viewpoint and experience of patients who are unhappy after surgery was another goal, with the hope of enhancing patient's satisfaction following TKR.

### Objectives

- To determine the level of psychological distress among post-operative TKR patients.
- To measure the pain threshold level in post TKR patients.

### METHODOLOGY

It was a cross-sectional study conducted at Hayatabad Medical Complex (HMC), Khyber Teaching Hospital

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(KTH), and Rehman Medical Institute (RMI) Peshawar. Subjects were enrolled using non-probability convenience sampling. The sample size was 77 participants calculated from Raosoft, including both male and Female patients.

**Participants**

Post-operative TKR patients with age of aged 40 and above years. The exclusion criteria include the patients who repeatedly suffered from TKR or having uni-compartmental Arthroplasty or Patella-femoral Arthroplasty.

**Data Collection Procedure and Analysis**

After the approval from the Research committee of AMI, permission had taken from the concerned Hospitals HODS through official permission letter. All the willing patients were briefed about the purpose and procedure of the study and then an informed consent was taken from them. Data was collected using the data collection tools i.e. NPRS and HADS Performa.

The data was analysed using SPSS version 26. For continuous data, mean and standard deviation was calculated, while categorical variable was presented in the form of frequency and percentages in the form of tables and graph. Chi-square test and Pearson correlation were used for the association of different variables.

**RESULT**

About 40 male and 37 female students were included in the research, with a mean age of  $55.55 \pm 11.621$ . The frequency for the duration after knee arthroplasty has also been calculated with the categories as recent, a few weeks ago, a few months ago, and past 1 year or more with the subjects as 34. 23. 10 and 10 respectively.

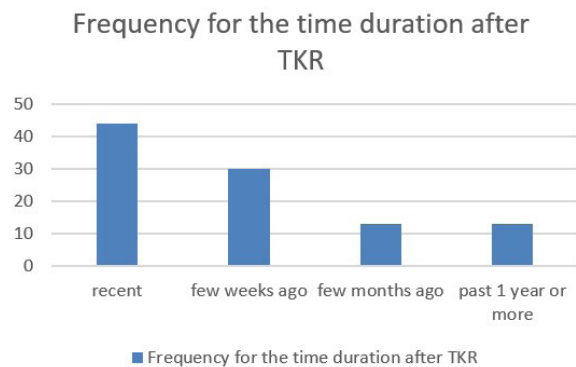


Figure 1:

**Chi Square of Categories of Time Duration with NPRS and HADS**

The correlation of categories of time duration with Numerical Pain Rating Scale and Hospital Anxiety and Depression Scale was significant with the p-value of <0.05.

**Pearson Correlation of Time Duration with NPRS and HADS**

The correlation test of duration of TKR with NPRS

and HADS (anxiety and depression). The result showed a moderately negative correlative of time duration with NPRS which interpret that with increase in time there was low level of pain observed in the subjects undergone through TKR. A negative correlation was observed between time duration and HADS with the p-value of < 0.05 which means that with the passage of time, the level of anxiety and depression decreases to some extent.

Table 1:

	NPRS	HADS (anxiety)	HADS (depression)
Time duration	-0.509	-0.361	-0.327
P-value	0.000	0.001	0.004

**DISCUSSION**

The current study illustrates the patients’ physical and psychological anguish following TKR surgery. A total of 77 people were recruited for the study, both male and female. The Hospital Anxiety and Depression Scale and the Numerical Pain Rating Scale were employed as outcome variables. According to the statistical research, patients who have had recent surgery report higher pain levels along with higher levels of anxiety and sadness, which diminish over time. Following knee surgery, there was a notable decline in the frequency of anxiety and depressed symptoms, which improved patient satisfaction. The current study has demonstrated a negative correlation between the length of time and the level of pain and psychological distress experienced by patients undergoing total knee replacement procedures. This suggests that an increase in time leads to a decrease in these symptoms, which in turn has a significant impact on the functional outcome of the patients.

Depression is a common co-morbidity among individuals who have had arthroplasty, according to Bistolfi *et al.* Given the established relationship between pain and depression, it’s possible that patients have higher rates of depression than the general population. Pain alleviation and enhanced function following arthroplasty may lead to an improvement in the patient’s depressive symptoms. (Tarakji, Wynkoop, Srivastava, O’Connor, & Atkinson, 2018). Approximately thirty percent of TKR patients endure psychological distress before to surgery. Studies have shown that patients with anxiety or depression perform worse on the outcome scale compared to those with higher psycho-social component scores. (Ayers, Franklin, Trief, Ploutz-Snyder, & Freund, 2004; Judge *et al.*, 2012; Lungu, Vendittoli, & Desmeules, 2016). A considerable portion of TKR patients have subclinical depression. (Bistolfi *et al.*, 2017).

Acute postoperative pain (APP) is the main cause of postoperative misery, yet conventional methods of pain assessment provide little information about the dynamics and course of APP. After a minimum of thirty of the short reports from thirty-two patients were provided, the investigation revealed a quadratic temporal effect

and significant ( $P=0.001$ ) linear and quadratic declines, resulting in 1217 records in APP. Some notable random intercepts and slopes indicated variations in mean pain levels amongst patients as well as a decrease in pain (Balthasar, Willemen, Vossen, Boymans, & Lousberg, 2023). Similar effects related to pain were observed in the current study, revealing that with the increase in time, the intensity of pain decreases significantly with the P-value of  $<0.05$ . One study reported that the level of pain subsides with the duration of time, so the level of distress decreases, which has also been proven in the current study.

Two studies reported that those patients who show evidence of clinical depression with time, they are more likely to experience more severe pain even with successful surgery, up to 30% of patients report feeling dissatisfied (Patil, Kane, Dhamangaonkar, & Avhad, 2020) (Schindler *et al.*, 2022).

## CONCLUSION

The study concluded that outcome patients, pain, and emotional distress are the major factors for functional outcomes. The current study reveals that with the passage of time, the level of pain and psychological distress, including anxiety and depression, as well as the pain threshold, decreases in the subjects who undergone the TKR procedure. There were some limitations of the study, which included patients with repeated TKR procedures were not included, and factors contributing to the decrease in pain and psychological distress had not been determined.

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