

**Comparative Study**

## **Monitoring the Quality of Sleep: A Comparative Study of Pre - Operative and Post- Operative patients of TKR**

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### **ABSTRACT**

Sleep quality refers to the overall effectiveness and satisfaction of one's sleep during a given period. It focuses on factors like how easily someone falls asleep, how often they wake up during the night, and the feeling of being well-rested upon waking up. High sleep quality implies restorative and uninterrupted sleep, leading to better physical and mental well-being, while poor sleep quality often results in feelings of fatigue, irritability, and reduced cognitive function.

**Keywords:** *Pre-operative, Post-operative, Quality of Sleep, Total Knee Replacement (TKR)*

An individual's self-satisfaction with all the aspects the sleep experience is to be called as sleep quality. Sleep can be referred as the overall effectiveness nature of a person's sleep. It is measure to know how well and satisfied the individual derive their sleeping experience. The factors which influences are sleep continuity. sleep duration, sleep architecture and various factors such as subjective feeling if awakening.

The duration of sleep is depended on the age and the demand of the individual's needs. generally, the adult individual should consume around 7-9 hours of sleep per night for healthy human body and mind. Sleep continuity is the ability to maintain uninterrupted sleep throughout the night. Frequent awakening, difficulty in falling asleep, waking up too early these are the various signs of bad sleep quality.

Sleep Architecture refers to sleep consists of different stages which includes non-rapid eye movement (NREM), sleep and rapid eye movement (REM) sleep. NREM sleep is further divided into three stages. There is the difference between going to bed and actual sleep. Some peoples go on bed at 10 O'clock but they actually sleep at 12 O'clock. That duration of actually sleep to waking up count as the quality of sleep of individual.

Subjective feeling which sleeping are how does individual feels upon awakening can indicate sleep quality too. If and individual feels refreshed, well-rested and alert it is sign of good sleep quality. Conversely, feeling of fatigue, grogginess or daytime sleepiness may indicate poor sleep quality. There are various types of sleep disorders such as insomnia,

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sleep apnea, restless legs syndromes can significantly impact sleep quality. These disorders often result in fragmented sleep, reduced sleep duration and disturbance in sleep architecture.

Sleep problems can be various factors. Although causes may differ, the end result of all sleep disorders is the body's natural cycle of slumber and daytime wakefulness is disrupted or exaggerated. few factors that cause sleep problem are physical disturbance, medical issues, psychiatric disorders, environmental issues. anger mood swings.

The frequency of insomnia in the general population ranges between 8-40%. While 20-30% of general population has poor sleep quality. The term insomnia is used in variety of ways in the medical literature. Most often, insomnia is defined by the presence of very individual's report of sleep.

Short term or Acute insomnia can be caused by the life stresses such as change of job or loss, death of any closed one, moving, illness or another environmental factors such as light, noise, temperature. Long term or Chronic insomnia refers as insomnia which occurs at least three nights a week for at least three months it can be caused by depression, chronic stress and pain or discomfort at night.

Other factors which interfere with sleep such are genetics, medication, aging and night shift work, long distance relationship, study pressure, Bing watching of movie or series.

Bad quality of sleep effects on individual's body in different way such like hair falls issues, irregular period cycle, undereye dark circles, mood swing, unhealthy digestion, metabolism slows down, increase of acidity problem, gain in fat which leads to you some bad habits like smoking cigarettes and drinking alcohol and doing drugs for sleep.

### REVIEW OF LITERATURE

Quality of Sleep is one of the most important factors for healthy human life. it is worth noting that maintaining a good sleeping pattern can vary among individuals and can be influenced by various factors, such as lifestyle, work schedules, stress levels, and overall health. Sleep patterns can also be affected by cultural and societal factors.

Several professions can contribute to the development of poor sleep patterns.

Few examples are:

#### 1. Shift Workers:

Jobs that involve irregular or overnight shifts, such as healthcare workers, emergency responders, and factory workers and call centres staffs. Insomnia, or difficulty falling asleep or staying asleep, can occur in people who work in call centres due to a variety of factors related to their work environment and job demands. some reasons why insomnia may be more prevalent among call centre employees.

Shift Work call centres often operate 24/7, requiring employees to work in rotating shifts that disrupt their natural sleep-wake cycle. Constantly switching between day, evening, and night shifts can lead to sleep disturbances and difficulty establishing a consistent sleep pattern.

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**Irregular Sleep Schedule:** Due to the nature of call centre work, employees may have irregular schedules that make it challenging to maintain a consistent bedtime routine. Lack of a regular sleep schedule can disrupt the body's internal clock and make it difficult to fall asleep when desired.

**High Stress Levels** in call centre work can be highly stressful, with employees facing demanding customer interactions, tight deadlines, and performance metrics. High levels of stress and pressure can make it harder to relax and unwind before bed, leading to insomnia.

**Cognitive Stimulation:** Call centre work often involves constant cognitive stimulation and problem-solving, as employees need to handle customer inquiries, resolve issues, and navigate complex systems. This mental stimulation close to bedtime can make it challenging for individuals to quiet their minds and transition into sleep.

**Noise and Distractions:** Call centres can be noisy environments with multiple conversations happening simultaneously. Background noise and distractions during working hours may contribute to difficulty in achieving restful sleep during the day for employees who have night shifts.

### **2. IT Professionals:**

Those working in the IT industry may face demanding workloads and tight deadlines, leading to long hours and irregular sleep patterns. Additionally, the use of electronic devices and exposure to blue light before bed can interfere with sleep quality.

Insomnia is a sleep disorder characterized by difficulty falling asleep, staying asleep, or experiencing non-restorative sleep. It can have various causes, such as stress, anxiety, poor sleep habits, or medical conditions. Insomnia can significantly impact individuals' overall well-being cognitive abilities, and performance at work, including in the IT sector.

The IT sector could involve examining the performance and productivity of IT professionals who suffer from chronic insomnia compared to those who get adequate sleep. It might involve collecting data on project completion rates, error rates, collaboration metrics, and employee well-being. Additionally, implementing sleep management strategies and evaluating their impact on work performance.

### **3. Addition of Games in Teenager:**

Game addiction in teenagers can have a significant impact on their sleep quality. **Delayed Sleep Onset** the Teens addicted to gaming often stay up late into the night playing games. **Disrupted Sleep Patterns** Sometimes Gaming can lead to disrupted sleep patterns. Teens may wake up frequently during the night to check on their games or play in the early hours, leading to fragmented sleep.

**Reduced Total Sleep Time** spending excessive time gaming can result in a decrease in total sleep time. Playing stimulating and exciting games can lead to increased physiological and psychological arousal, making it difficult for teens to r relax and fall asleep.

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### METHODOLOGY

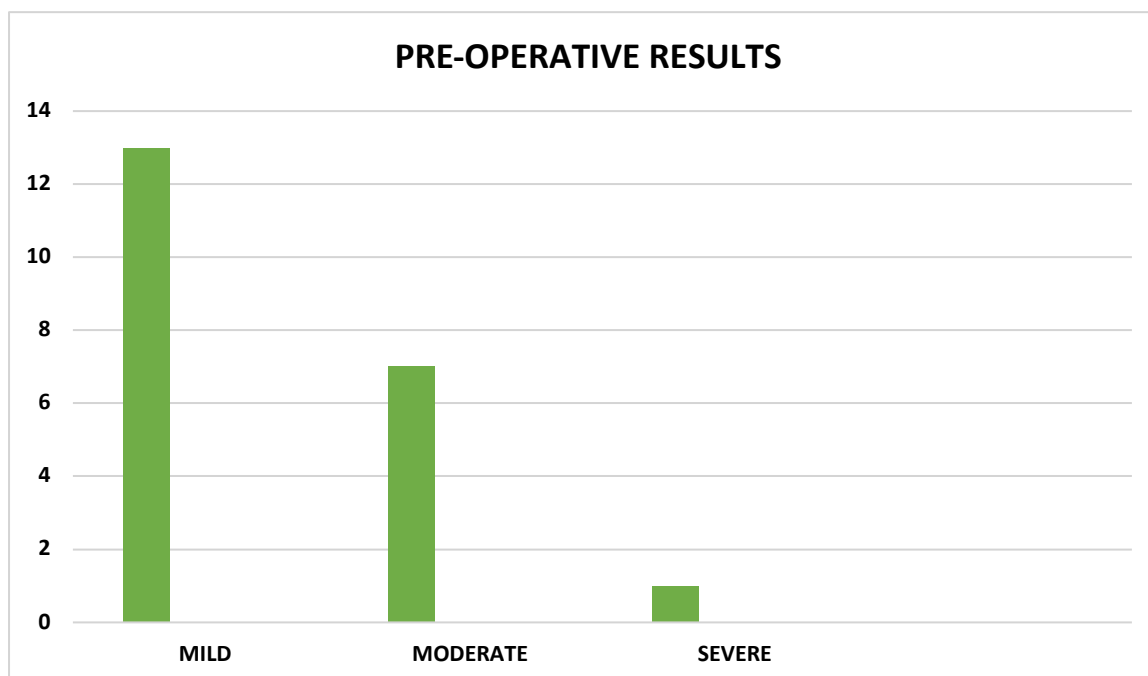
A survey was conducted to obtain the results of study. The questioner used for obtaining the data was Pittsburgh Sleep Quality Index (PSQI). All the participants are administered the sleep test after consent and the test is administered pre operation and post operation. A prospective observational study design was employed to compare quality of sleep-in patients undergoing TKR surgery.

A sample of patients scheduled for TKR surgery was recruited, and their sleep quality was assessed preoperatively using standardized sleep assessment tools such as Pittsburgh Sleep Quality Index (PSQI). Follow- up assessments were conducted at specific postoperative time points, including one week, one month and three months after the surgery. The data has been analysed using appropriate statistical method to determine appropriate result.

### RESULTS AND DISSCUSSION

#### *Pre-Operative Patients*

After collecting the data of patients, we have analysed that majority of the patients are having sleeping issues. Because of the pain they are facing from past years and years, also some of the patients are very much tensed and wounded up about the operation. Now we have categorized them into three category Mild, Moderate and Severe. In the pre-operative patients, we can clearly see that most of patients are facing mild and moderate level sleeping issues.

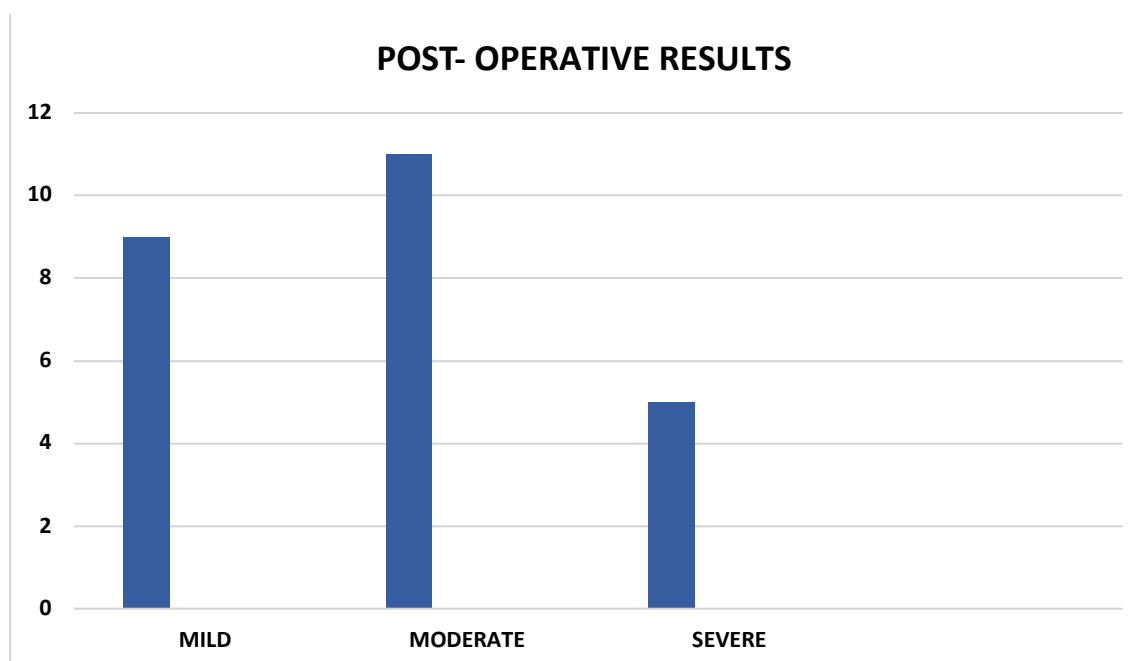


#### *Post-Operative Patients*

After collecting the data of patients, we have analysed that majority of the patients are having sleeping issues. Because of their surgical pain/after operational pain.

As per the participants test results majority of the patients are facing moderate to severe pain after the surgery. The quality of sleep of patients is demanded on the recovery from the surgical pain.

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The analysis revealed a statically significant increase in sleeping issues among patients after TKR surgery compared to the before operation. In pre-operatively the proportion of patients experienced mild to moderate sleeping issues, but post-operatively sleeping quality as showed a notable increase. It was observed that the postoperative patients exhibited higher sleeping issues.

As per the collected data in pre-operative patients there was 13 patients facing mild issue, 7patients facing moderate level issues and only 1 patient was having severe intensity of bad sleep quality because of their intensity of pain they were tolerating from past 5-7 years. That the increase in pain caused them increase of bad sleep quality which might can lead them to some sleeping disorders such as insomnia.

In post-operative patients' data, we can clearly see that there are 9 patients facing mild issue, 11 patients facing moderate issues, but 5 patients are facing severe problem of sleep. In compare to pre-operative and post- operative there is sudden increase in number of patients facing serve problem and decrease in mild and moderate.

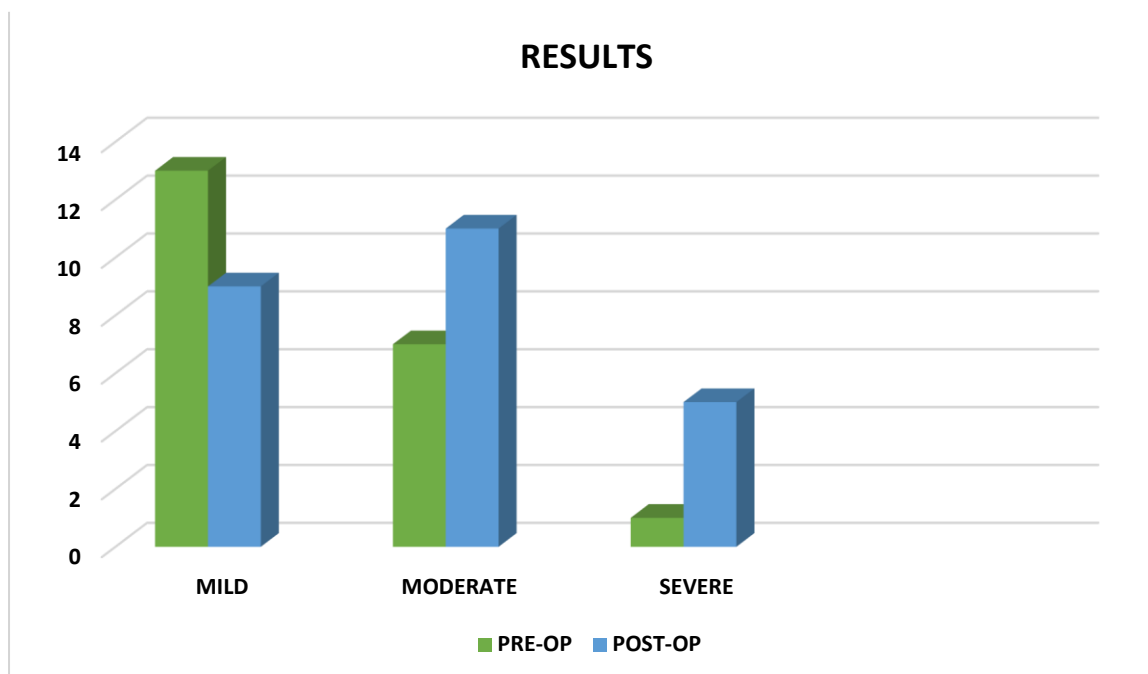
In comparison of the both the data the patients are facing more pain and their sleep cycle is more disturbed after the surgery. Initially the intensity of surgical pain is much more increase then their past 5 to 7 years. But as per the time passes the pain get decrease and sleeping cycle of patient gets back in routine.

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### COMPARISON

PRE-OPERATIVE			POST OPERATIVE		
MILD	MODERATE	SEVERE	MILD	MODERATE	SEVERE
4	10	17	4	12	16
6	9	TOTAL-1	4	12	15
1	9		6	11	16
5	8		3	11	19
3	11		5	14	18
4	10		7	10	TOTAL-5
3	13		5	11	
7	TOTAL-7		4	9	
3			0	9	
7			TOTAL-9	8	
5				14	
6				TOTAL-11	
5					
TOTAL- 13					

### RESULTS



### CONCLUSION

This research study has identified a significant increase in sleeping issues among patients in postoperative period of the Total Knee Replacement surgery. The necessarily of recognizing and addressing the psychological challenges faced by the patients during the postoperative phase. By comprehensive study, the quality of sleep of patients gets fluctuate according to the intensity of their pain.

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### *Further Studies*

- Planning to analysis more about how sleeping disorder starts in Gamers, Pharmacist, more about IT professionals
- How to improve their sleep quality and also balance the work life.

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### **Conflict of Interest**

The author(s) declared no conflict of interest.

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