

## Impact of Sleep Quality and Pain Management on the Mental Health of Inpatients

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### ABSTRACT

Sleep plays a crucial role in mental health, yet its impact on hospitalized patients remains insufficiently studied. This research explores how sleep quality and sleep disorders relate to the mental health of inpatients. A cohort of number individuals at specific settings/hospitals underwent evaluations using standardized assessments of sleep quality and mental health status. The findings reveal a significant correlation between poor sleep quality, diagnosed sleep disorders, and heightened symptoms of anxiety, depression, and overall psychological distress among hospitalized individuals. Additionally, the results suggest that effectively addressing sleep disturbances could potentially enhance mental health outcomes and fast recovery of the inpatients.

**Keywords:** *Sleep Quality, Pain Management, Mental Health of Inpatients*

Sleep is very crucial for both physical and psychological recovery. Decent quality of sleep reduced amount of anxiety and pain, controlled blood sugar levels, blood pressure levels and improved immunity for fighting infections. Research indicates that sleep quality is essential for hospitalized patients, yet hospital environment frequently impairs both the duration and quality of sleep. Studies reveal significant findings such that adults sleep 1.3- 3.2 hours less than recommended while children deprive of 0.7-3.8 hours of sleep in the hospital settings. (Burger, P., et al., 2022).

Our sleep patterns are associated with our ongoing lives, we often experience consistent and peaceful sleep in our childhood and as we age responsibilities and other factors such as relationships in family, workplace, career framing influence our sleep cycle which may result in drastic change in the sleep duration and quality. It is also noticeable that as we age, sleep disturbances become more prevalent as a range of factors such as susceptible overthinking, worrying and changes in physical health, medical conditions and medications which results in reduced sleep quality among older adults. (Newson, R., et al., 2023).

Moreover, 76% studies note poor sleep quality among patients. In comparison to home environments, inpatients sleep approximately 1 hour less and experience a notable decrease in sleep quality. (Burger, P., et al., 2022). Sleep is a fundamental and automatic process that

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is indispensable for our effective functioning. It is as crucial to our well-being as eating, drinking, and breathing, playing a vital role in sustaining both mental and physical health. Sleep aids in the rejuvenation and repair of our brains, in addition to our bodies. Sleep quality is a profound factor which affects mood regulation such that poor sleep can lead to irritability, mood swings and increased stress levels. In addition, cognitive functions such as concentration, memory and decision-making power and overall mental clarity might be influenced. (Alhola, P., et al., 2007). Chronic poor sleep is also responsible for increased risk for psychiatric disorders such as depression or anxiety and exacerbates its severity if already prevailing. Sleep impacts the physical health of the person as well, contributing to increased risk of developing problems like diabetes and cardiovascular diseases. (Institute of Medicine (US) committee on sleep medicine and research, 2006). Improvising sleep quality through good patterns and practices is particularly important as it is a vulnerable factor to increased mental fluctuations. Our sleep patterns are associated with our ongoing lives, we often experience consistent and peaceful sleep in our childhood.

Two types of sleep which can determine our sleep quality index such as good sleep and bad sleep. Good sleep, as the name suggests, determines a profound quality of sleep when we fall asleep easily, without interruptions and feel refreshed when we wake up in the morning. On the contrary, poor sleep determines difficulty sleeping, frequently waking up while sleeping and feeling restless on a consistent basis.

### LITERATURE REVIEW

A cross-sectional study has been conducted which describes sleep as a prominent factor of mental health illness or sort of fluctuation. The main aim of this study was to evaluate if sleep disturbances affect the mental health inpatients in some or other way. A total of 2246 patients were studied in a cross-sectional study under eight public mental health care centres in Norway and the results were measured. Patients were of age between 18- 85 years and the mean age was 39.5 years. Multiple assessments were conducted for examining; for quality of life, Manchester short assessment of quality of life (MANSA), patients also completed the symptom checklist. The level of benefit from the treatment was also measured, three items from the symptom checklist also measured the level of sleep disturbance. The hypothesis was tested using multiple hierarchical regression analyses. The main limitations being the results were being rated using rating scales that had not previously been validated. The data collections were commissioned by the Norwegian department and were conducted by an independent institution. Other than that, the cross-sectional study design does not allow for causal conclusions, and we cannot differentiate between sleep disturbance and symptom severity. The result was later studied and derived as sleep disturbance fluctuated within the age factor, gender, time of treatment and the type of care. Presence of an already existing mental health disorder and lower satisfaction from the treatment also affected the sleep analysis. (Kallestad, H., et al., 2012)

Another cross-sectional study has been reviewed which studied post-operative poor sleep quality and its associated factors among non-small cell lung cancer patients. Number of patients counted as 307, average age of these participants were 59.97 years, who underwent thoracoscopic surgery at the department of thoracic surgery of Shanghai Pulmonary Hospital. Generalized anxiety disorder -7 (GAD-7), The Pittsburgh sleep quality index (PSQI), Patient health questionnaire-9 (PHQ-9) and some specific tests were conducted to these patients to detect the factor intruding the sleep quality. Hence 74% percent of the patients experienced poor sleep quality after the surgery. The median score for anxiety and depression scores were 4 and 6 respectively. The conclusion suggests that to suspect the

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factor of poor sleep comorbidities, sociodemographic variables and pain management can be used to get sleep quality outcomes in non-small cell lung cancer patients. Moreover, poor sleep can contribute to complications such that, speed of recovery post operation might be decreased, heightened pain realisation which may contribute to longer hospital stays. Hence, we get an overall idea by studying research which suggest that lower sleep might contribute to increased risk of cardiovascular disease such as coronary disease, haemorrhagic stroke, ischaemic stroke and even cancer. These findings also contribute to previous findings that suggest that the measured poor sleep quality is detected in patients suffering from other kinds of cancers or have experienced major surgery. The study has also found that educated patients have better health literacy which makes them understand and aware about the decisions to be taken about their physical wellbeing. Hence poor sleep quality has also been associated with major psychological interventions such that the GAD7 and PHQ9 assessment displayed that around 45% of NSCLC patients showed symptoms of depression and anxiety. The limitations of this study have also been studied: the sample size of the study was very limited, and the data was also collected from a single centre. Also, pre-surgical sleep quality data has not been collected, hence comparison can also not be done. (Chen, X., Hu, Y., et al.,2023)

Another research shows a study on sleep in hospitalized older adults. For older adults, hospitalization is a period of sleep deprivation due to medical, environmental and patient factors and in that period, they need a proper amount of rest ensuring prominent recovery speed. Although age factor affects a lot in the recovery process as older populations are also at increased risk of medication side effects and a variety of non-pharmacological interventions. They are recommended to improve sleep loss for better recovery. Sleep loss in older adults is relevant as they experience less REM sleep or occasionally total loss of sleep. Patients also have complaints about insomnia, and they are easily aroused from lighter interventions such as visits from doctors and nurses or attenders to have an update which is very common in hospital settings, hence the sleep cycle might get disturbed due to environmental stimuli. Any sort of psychological interventions such as loss of social support, pain intolerance and anxiety about if they would be better and be able to do their activities on their own or not, also affects the sleep cycle. (Stewart, NH., et al., 2018)

### **METHODOLOGY**

This study investigates the strategic viewpoint of both the pre-operative and the postoperative sleeping patterns or conditions and the processes. Hence, the samples in the study have been admitted to a multispeciality hospital for the treatment for arthroplasty, such that anterior cruciate ligament (ACL) reconstruction, total hip replacement (THR), total knee replacement (TKR), cholecystectomy etc. This study has been deeply strategized to collect the quantitative as well as qualitative data in account of how sleep patterns and quality affects their mental health post-surgery as well as their daily life.

The participants are selected from a hospital setting age ranging from 40-70. A strategic and effective standardized questionnaire which mostly included an informal interview, was prepared to collect the data. The number of samples included twenty-five males and twenty-five females which supported the idea that it would not include a gender biased limitation. A collection of open ended and close ended questions was prepared with the help of google forms which included multiple choice questions, which mostly consisted of relevant questions, it includes the post-surgery complications in sleep such that intolerable pain, anxious thoughts after the surgery which may cause sleep deprivation. Unstructured interviews were also conducted to gain qualitative knowledge regarding other factors

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affecting the sleep which may include some other issues other than pain such as financial strain, emotional discordance etc. Hence the responses collected by the google forms strategically evaluated the patterns and recorded the responses to derive a profound result. A comparative analysis is also done to recognize the difference between male and female participants which also considers the age group. The questionnaire includes deep and enhanced questions which extracts best of the information regarding the sleep patterns and the quality of sleep prior operation and post operation. Hence, with profound information we can try to lessen the sleep deprivation from the concerned patients.

### *Ethical consideration*

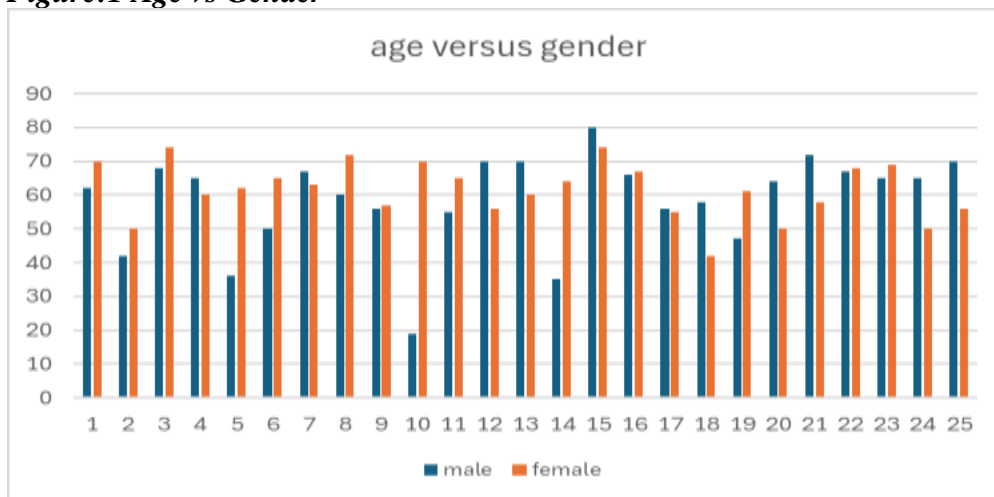
For examining patients for study, an official approval from the hospital board had been taken. In addition to that, before counselling of each patient, consent was taken to ensure confidentiality.

### *Limitations*

Results were limited to a certain age group of inpatients that is 40-80 years which may have compelled a limited outcome. As per the hospital regulations, we could not examine patients other than Total knee replacement (TKR) and Total Hip Replacement (THR) which also led to restricted interpretation.

### *Demographic representation of participation of data collected.*

*Figure:1 Age vs Gender*



The above derived data suggests the median age of the participants i.e., 40-80.

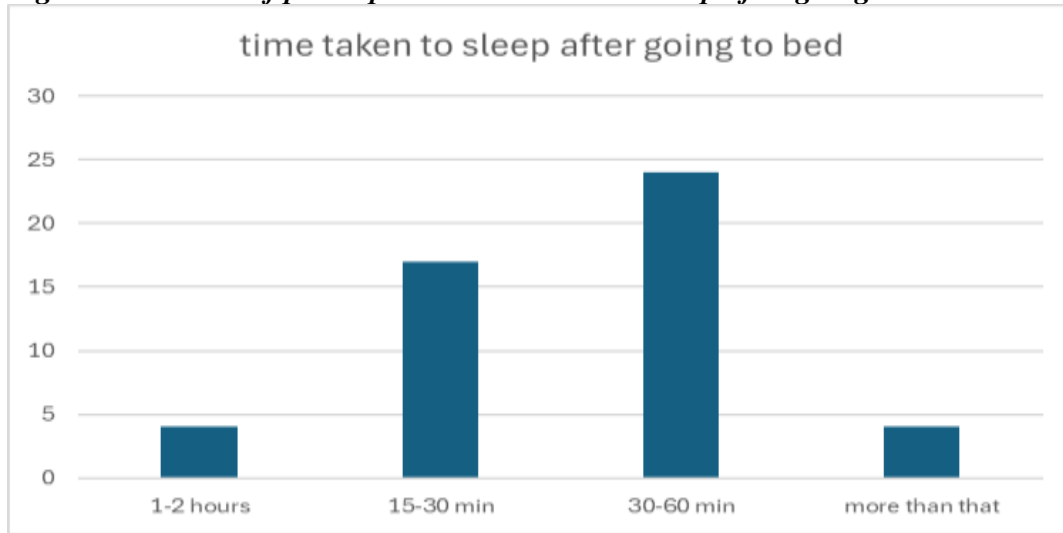
*Figure: 2 number of participants experiencing trouble in sleeping.*



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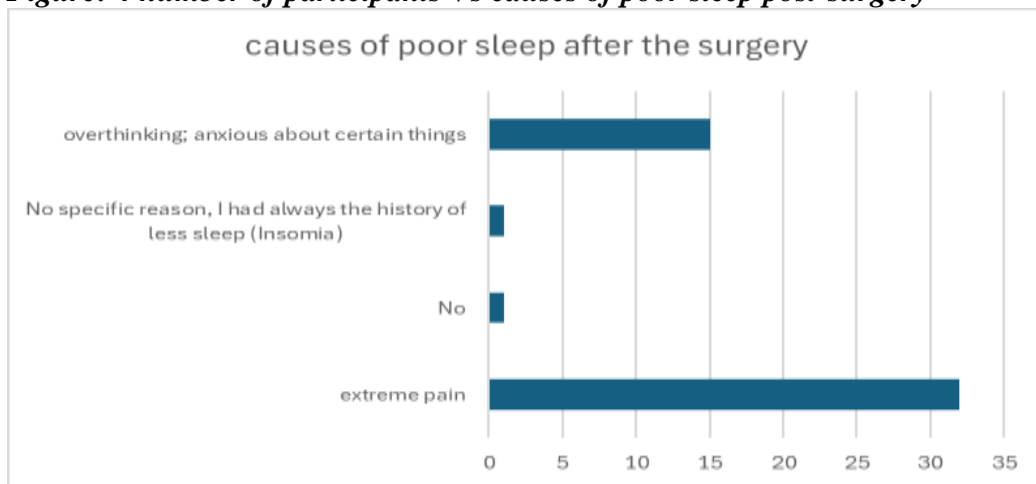
Pre-surgical trouble sleeping accounts in the above given data which differentiates outcomes of post-surgical sleeping issues.

**Figure: 3 number of participants Vs time take to sleep after going to bed.**



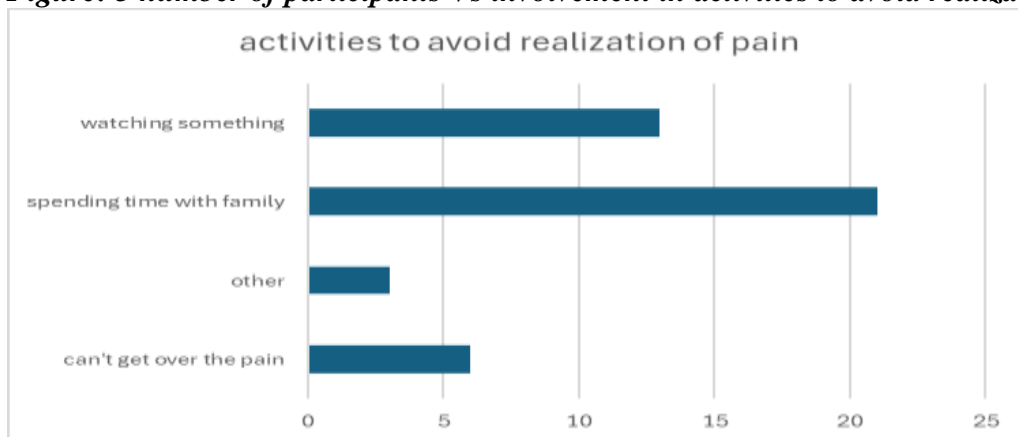
Majority of participants took up to 30-60 minutes to sleep after going to bed.

**Figure: 4 number of participants Vs causes of poor sleep post-surgery**



Post-surgical pain accounted as the highest intruding factor in the sleep patterns and quality.

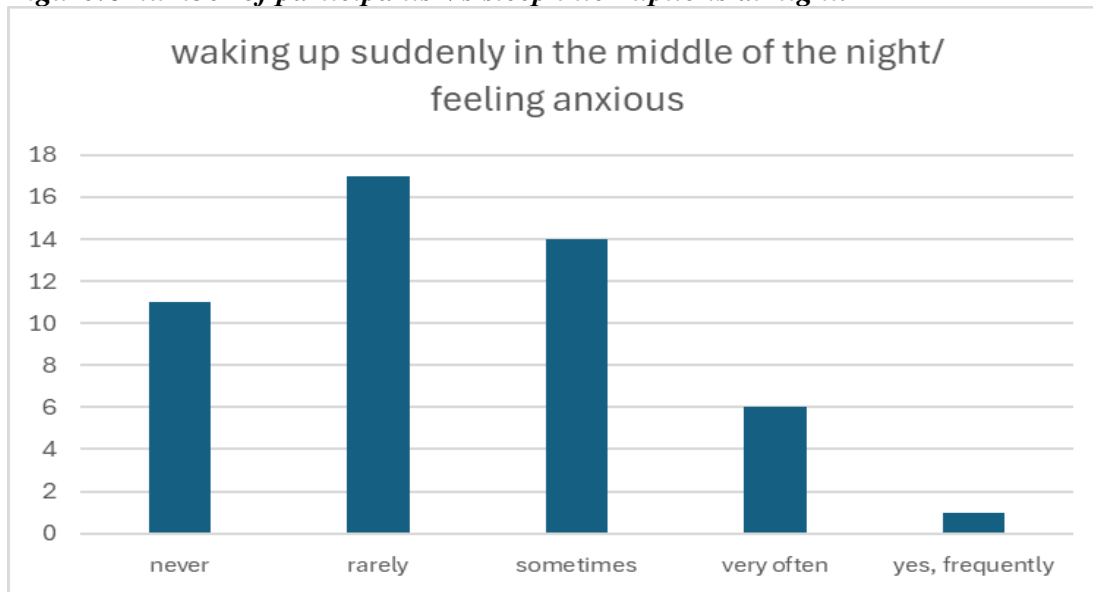
**Figure: 5 number of participants Vs involvement in activities to avoid realization of pain.**



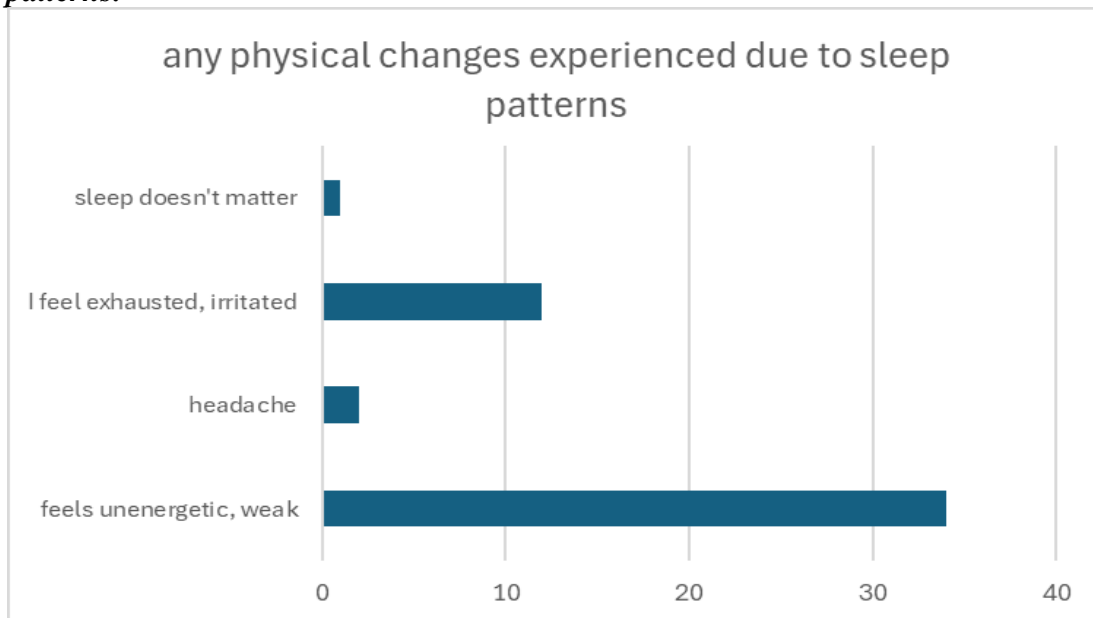
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Family members usually showed up with the patients which indicated spending more time with them, although several patients spent time watching something to avoid realizing pain.

**Figure:6** number of participants Vs sleep interruptions at night.



**Figure:7** number of participants experiencing physical changes due to irregular sleep patterns.



Physical changes such as weakness and irritation were experienced due to insufficient and poor quality of sleep.

## RESULTS AND DISCUSSION

The results had been collected from the population of inpatients and a detailed discussion with an unstructured interview has been provided to have the utmost information and a clarified result. According to figure-1, the inpatient population in the Shalby hospital has been mostly of the age group of 40-80 years for the arthroplasty surgery. People experiencing symptoms of arthritis referred by a doctor for arthroplasty surgery, mostly for total knee replacement and total hip replacement have been the part of this research project.

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Although the population interviewed suggests that inpatients of age group 40-80 years experienced sleep issues after the surgery due to multiple reasons but dominantly due to pain that is caused due to surgical wounds. Pain caused after the surgery has been very intolerable for the patients which also causes uneasiness, anxiousness and panicking in some cases which is responsible for poor sleeping schedule and patterns. Mainly three factors have been identified for the irritability and restlessness caused due to pain. Firstly, the age factor has been the prior cause of most inpatients who suffered from sleeping issues. Reduced level of pain tolerance and inability to function conventionally may have been the reason. Furthermore, people who have adapted the house environment faced much difficulty during the stay in the hospital adding into that, pain caused more trouble. And lastly, irregular bowel movement caused due to medications such as anaesthesia, tranquilizers and sleeping pills caused much more uneasiness. In some cases, it has also been noticed that even after giving high dosage of sleep medications, patients faced difficulty sleeping. Feeling of anxiousness such as would they be able to walk again after the surgery or would it be the same condition again, financial circumstances, family consequences and much more has been identified for the irregular and disturbed sleeping schedule. Moreover, patients felt more pain and discomfort after the physiotherapeutic exercises that are performed by patients on the next day of the surgery. Constant pain has been detected on the first 3 days after the surgery, although with the counselling sessions which has been conducted continuously from being admitted to the hospital in the pre-operative part to the day of discharge, patients have been asked to improve the pain tolerance level and stay stable during the unbearable situations. Pre-operative counselling sessions involve formation of rapport and making them aware of the upcoming consequences. Majority of the patients had a good involvement in the conversation. Hence the next session would take place in the ICU right after the surgery, although a very brief conversation would take place due to patients' limited capacity to be involved. The third part of the session would directly take place in the patient room and thereafter every day they would be visited to check the status until the day of discharge. Patients would be allotted to our team members so that they form rapport with the certain counsellor only.

In the counselling session patients were motivated to lessen the realization of the pain they were experiencing, they were advised to divert their attention to different activities such as talking to the family members, watch something and do mindful activities such as meditation and yoga. Many accepted these recommendations, but numerous patients could not get out of the pain realization, due to many aspects involving such as fixed mindset and age factor. After motivating and lifting their mental status, many patients started working into the solutions by spending time with their families and doing mindful activities which involved being grateful and having hope for better circumstances.

Interview also questioned if there are any physical changes experienced after the surgery such as feeling of nausea, irritability and uneasiness, most of the patients accounted positively for the question. Weakness and unenergetic feeling were experienced by the patients. Hence overall results suggest that reducing or diverting attention towards any other environmental stimuli can help have a better sleep which is responsible for speedy recovery in these kinds of inpatients.

### **CONCLUSION**

The result suggests that poor sleep quality and disrupted patterns is primarily caused by excessive pain experienced by the patient's post-surgery, hence leading to irritability, stiffness and showing disinterest. The pain must be prevailing before the surgery but the

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factors such as hospital environment, inability to move and age, might contribute to the overall discomfort in sleeping in hospital post-surgery. Results from informal interviews and the counselling sessions suggest that after giving some affirmations, patients showed positive response towards the recovery process and tried to overcome their conditions by trying to sleep. Sleep contributes to overall mental conditions to work efficiently. The overall conclusion suggests that sleep cycle and the regular pattern with utmost quality is very crucial for the faster recovery in both mental and physical health of inpatients.

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### Conflict of Interest

The author(s) declared no conflict of interest.

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