

Factors Affecting Quality of Sleep in Intensive Care Units of Gulab Devi Chest Hospital and Hameed Latif Hospital, Lahore

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Highlights:

- ▶ Quality of sleep is effected by environmental stimuli.
- ▶ The environmental etiologies of sleep disruption in Intensive Care Unit are multi-factorial.

Abstract:

Sleep disruption etiology in Intensive Care Unit (ICU) is poorly understood and overlooked. It may be related to environmental stimuli especially noise, pain, human interventions and diagnostic testing which are disruptive to sleep. The environmental etiologies of sleep disruption in ICU are multi-factorial.

Objective:

To access the factors affecting the quality of sleep in patients admitted in intensive care units of Gulab Devi Chest Hospital and Hameed Latif Hospital, Lahore.

Methodology:

A cross sectional study was done after the approval of synopsis. Sample size of 150 was collected by using purposive simple random technique from patients of ICU and HDU in Gulab Devi Chest hospital and Hameed Latif hospital Lahore. Data was collected by using Freedman questionnaire and analyzed through SPSS 16.0 version. Mean and standard deviation of age, gender and frequency and valid percent of rest of variables were drawn.

Results:

Mean age of patients were 50.46+ 10.96 years. 53.33% were male 46.67% were female participated in this study. The sleep in ICU was significantly poor than at home. On analysis 54.67% patient had poor quality of sleep in ICU due to pain and 48.67% had poor sleep quality due to noise of environmental stimuli.

Conclusions:

The relationship between the poor sleep in

critically ill patients and their ultimate outcomes remains unknown but potentially important. Reduced sleep quality is a common problem in ICU with multi-factorial etiology. Patient report poor sleep quality in ICU due to environmental factors that are potentially modifiable.

Keywords:

Intensive care unit, high dependency unit, surgical intensive unit.

Introduction:

Sleep is natural and periodic state of immobility and active physiological process in which individual is unaware of environment and unresponsive to external sensory stimuli. During sleep all voluntary muscles are inactive and metabolic rate is reduced.¹ Difference of the sleep and coma is pathology, coma is defined as inability to obey commands, to speak or to open the eyes due to severe head injury or any other pathological condition.²

Sleep deprivation and fragmentation cause negative impact on respiratory system by decreasing the function of respiratory muscles and the ventilator response to CO₂. Sleep disturbance has significant psycho physiological effect in intensive care unit patients which protract recovery and increased mortality. The etiologies which cause sleep disruption are multi-factorial namely noise light and clinical care interactions.³

In Critical Care Unit (CCU) the sleep deprivation is a significant problem for the patients. It is active and complex process. There are different factors which contribute to a patient inability to sleep i.e. Noise, lights, pain, discomfort, stress and medications.⁴

In patients with respiratory disorders sleep loss is common.⁵ Stress have detrimental effects on patient sleep in ICU and the nursing interventions which are for abatement

of stressors also enhance the sleep disruption of patients. It needs to remove stressors to promote sleep in ICU.⁶

In ICU the presence of strange machinery alarms, unpleasant smells, unfamiliar people, bright lights are factors which contribute to physical and psychological stress in patients.⁷ ICU are regarded unpleasant places for occupants. Intensive care units environment is more responsible for disturbance in their behavior and sleep rather than underlying disease.⁸ Many noises causing sound peaks >80 dBA are amendable to behavior modification and the ICU noise can be reduced through a program of behavior modification.⁹ In ICU the alarms causes most irritating noise.¹⁰

It is investigated that sleep disruption is a common problem in ICU however there is lack of evidence related to quality of sleep in ICU in Pakistan. Current study is conducted to identify the risk factors of sleep disruption in ICU and identify the awareness in medical staff about sleep disturbing factors.

Methodology:

A cross sectional study was conducted. The data was collected from cardiac intensive care unit, chest intensive care unit, high dependency unit of Gulab Devi chest hospital and Hameed Latif hospital, Lahore. Non probability purposive sampling technique was used for data collection. The data was collected using freedman questionnaire from 150 patients age 30-65 year with minimum stay of 2 days in ICU were included in the study. Patient under sedation, on ventilator and who declined were excluded. Consent was taken from patients. Descriptive statistical analysis was done in Statistical Package for Social Sciences (SPSS) version 16.00. Mean \pm SD was to express quantitative variables while qualitative variables like gender and frequency of different factors affecting quality of sleep were presented using appropriate graphs.

Results:

50.46 \pm 10.96 years was the mean age with maximum age of 65 and minimum age of 30 years. 53.33% were males and 46.67% were

females. Quality of sleep at home was poor in 30 (20%) patients, 62(41.33%) had good sleep at home and 41 (27.33%) have very good sleep at home. There were 17 (11.33%) patients with excellent sleep at home (Figure 1).

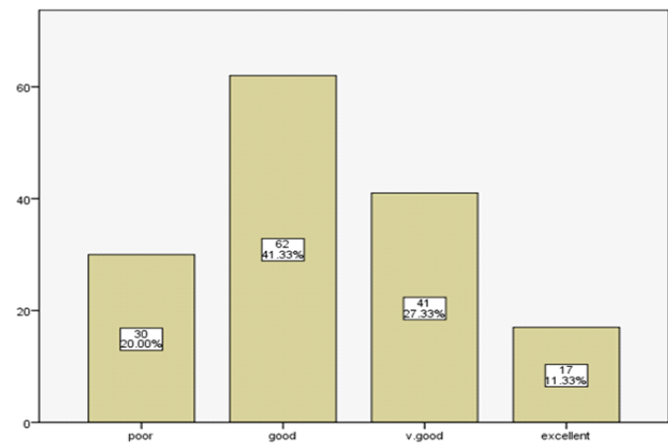


Figure 1: Quality of Sleep at Home

Out of 150 patients admitted in ICU 81(54%) patient were with poor sleep, 35(23.33%) with good sleep, 32(21.33%) with very good sleep and 2 (1.22%) were with excellent sleep in ICU (Figure 2). Majority of study population had good quality of daytime sleep after extubation.

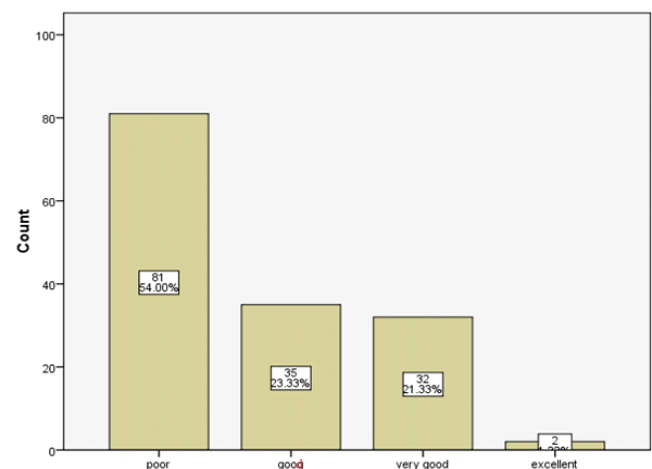


Figure 2: Quality of Sleep in ICU

Discussion:

Sleep disruption was due to environmental noise and alarms in ICU. In ICU 54% patients were with poor sleep while at home only 20% were with poor sleep. According to results of Freedman study conducted on sleep disruption in the intensive care unit ICU sleep quality was significantly poor than at home. Quality of was

poor due to human interventions and diagnostic testing as environmental noise. The environmental etiologies of sleep disruption were multi-factorial. The results were same as by Freedman.¹¹

Another study showed the same results in which sleep quality was decreasing at ICU as compared to home which decreased from 7.0 ± 2.2 to 4.0 ± 1.7 during their stay in ICU.¹²

According to results of my study the majority of patient had disrupted sleep due to noise. The 48% patients had disrupted sleep due to noise. The result of Freedman study showed environmental noise in part responsible for sleep wake abnormalities, it is not responsible for the majority of sleep fragmentation and may therefore not be disruptive to sleep.¹³

The sleep quality was poor in majority of patients admitted in ICU. The past study shows Quality of sleep in ICU was poor very poor in 69% of patients.¹⁴

In current study patient sleep quality was poor due to pain. There were 54% patients with poor sleep due to pain. According to another study results conducted by Morin the pain is prevalent complaint in patient with sleep disruption.¹⁵

In my study sleep is poor in 54% patients due to pain and in 48% patients due to noise 10% due to light. There was little effect of other factors for poor sleep. According to past research by Little.¹⁶ Asleep was poor by 59% as compared to 24% at home. The factors disturbing to sleep disruption were noise pain light loud talking. Mostly results are co-related with Patient and nurse assessments of sleep by questionnaires have been used in the ICU. The Richards-Campbell Sleep Questionnaire (RCSQ) is a brief, five-item questionnaire that uses a visual analog scale to assess sleep depth, latency, awakenings, percentage of time awake, and quality of sleep. The RCSQ has been validated against PSG in alert and oriented critically ill male patients, and the questionnaire can be completed by the patient or the nurse.¹⁷ Studies examining reliability measures between patient and nurse assessments of sleep using the RCSQ are mixed.

Two studies indicate that nurses overestimate sleep quality compared with their patients¹⁸, whereas another study reported a high degree of correlation between patient and nurse assessments of sleep quality. Nurse-derived assessments of sleep overestimate total sleep time and sleep efficiency and underestimate the number of awakenings compared with PSG. The pitfalls of patient reporting of sleep are potential inaccuracies in data due to the use of sedation and delirium.^{19,20}

Despite ongoing research, limited scoring methods exist to assess and interpret sleep in ICU patients, with most studies reporting small sample sizes and study-related variability in the ICU population. Because ongoing research imparts understanding of how environmental and pathophysiological factors affect sleep, the field of sleep analysis will continue to evolve. For the clinician at the bedside, using sleep survey questionnaires is the easiest method to assess patients' sleep, despite their limitations with little difference in percentages.

Conclusions:

The relationship between the poor sleep in critically ill patients and their ultimate outcomes remains unknown but potentially important. Poor sleep may contribute to the larger problem of brain dysfunction in the ICU, of which delirium is a manifestation. It is concluded that poor quality of sleep is common problem in ICU. There are multi-factorial etiologies causing sleep disruption. Majority of patients have poor quality of sleep in ICU due to pain noise and alarms. Others factors are less common for sleep disruption. Due to these factors the quality of sleep is decreased in ICU as compared to home. These factors are potentially modifiable to improve the quality of sleep.

Recommendations:

A multi disciplinary approach to understanding and treating the problem will require commitment on the part of ICU practitioners and hospital administrators, which in turn may lead to significant improvement in ICU care and patient outcomes.

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