



ROLE OF SUBSTANCE ABUSE IN SLEEP RELATED DISORDERS IN TRAUMATIC BRAIN INJURY PATIENTS AT A TERTIARY CARE CENTRE

Psychiatry

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ABSTRACT

Traumatic Brain Injury (TBI) is a major health concern for many countries across the world. The relationship between substance use, head trauma, impaired consciousness and cognitive disturbance is well established but the association of substance abuse in head injury and sleep disturbance is not extensively studied. The study includes the correlation between Substance abuse, TBI and Sleep Disturbances. Total 100 cases were assessed in a Neuropsychiatric Clinic at a tertiary care centre for sleep disturbances in TBI patients with substance abuse using PSQI (Pittsburgh Sleep Quality Index), ESS (Epworth Sleepiness Scale), and ISI (Insomnia Severity Index). According to PSQI, ESS, and ISI 74% of patients were poor sleepers, 37% of patients had daytime sleepiness and 96% of patients had Insomnia respectively. In this study it has been found that most of the patient with alcohol abuse had Traumatic brain injury as compared to other substances. Statistically significant correlations of LOC (loss of consciousness), GCS (Glasgow Coma Scale), severity of TBI with respect to PSQI and its component, ESS and ISI. Also there were statistically significant correlations with respect to Right lobe TBI as compared to Left lobe TBI. The study concludes that patients with traumatic brain injury with substance abuse faces the problem of sleep disorders. The Components of PSQI, ISI, ESS, LOC, and GCS are all intercorrelated to each other in TBI patients with substance abuse.

KEYWORDS

Traumatic brain injury, Substance abuse, sleep disturbances, PSQI, ISIS, ESS, LOC, GCS.

INTRODUCTION

Traumatic brain injury (TBI) is considered a major health concern for many countries across the world. Traumatic brain injury is best defined as an externally-inflicted blow to the brain with a cause that is not related to any premorbid medical or surgical condition. Lifelong abnormalities in physical, cognitive, social, emotional, and behavioural function could result from the TBI.^[1]

Substance abuse, especially in those that have developed a dependency or an addiction to drugs and alcohol, increases the chances of a traumatic brain injury. Similar to substance use disorders (SUDs), TBI patients are frequently thought of as having pre-existing illnesses rather than as a result of TBI.^[2] The most widely used drug among those with a TBI history is alcohol.^[3]

According to estimates, 10–44% of TBI patients consume illicit drugs, while 37–66% of TBI patients struggle with alcohol use disorders.^[4]

Heart arrhythmias, blood clotting issues, hypertension, and diabetes are all risk factors for stroke and have all been linked to chronic alcohol abuse.^[5] A history of substance misuse is linked to worse TBI outcomes, including a higher risk of mortality, comorbidities, and poorer hospital as well as continued disability and non-productivity a year or more after brain damage.^[6,7]

Sleep problems are common in patients with brain injuries.^[8] Lack of sleep can aggravate or make depression, anxiety, exhaustion, irritability. It may also result in decreased productivity at work, traffic or workplace accidents, as well as a rise in drug abuse.^[9] There are many studies of sleep related disorder in traumatic brain injury but studies related to substance abuse in sleep related disorder in traumatic brain injury patients are very less. So, this study will definitely be an addition to understand the problem in TBI.

OBJECTIVES-

To study the correlation between Substance abuse, TBI and Sleep Disturbances.

METHODOLOGY

1. The present study was conducted in the outpatient department of psychiatry & neuropsychiatry clinic in tertiary health care
2. A total of 100 patients with TBI, drug abuse & sleep disorder were included after they satisfy the eligibility criteria.
3. Written informed consent was taken by all the study participants.
4. A detailed history and complete general & systemic examination were noted on proforma.
5. The purpose of the study was explained to the reporting individuals.

Inclusion Criteria:

1. Patients of age between 20 to 70 yrs.
2. Patients willing to participate in the study after giving written informed consent
3. Patients with TBI with substance abuse will be assessed from 7 days to 1 month post-event.

Exclusion Criteria:

History of any documented psychiatric illness, cerebrovascular diseases, epilepsy, h/o sleep-wake modifying treatment, systemic illnesses.

RESULTS & DISCUSSION

Table 1. Age- Gender Distribution

Age in years	Male (n)	Female (n)	Percentage (%)
20 - 30	1	0	1.00%
30 - 40	20	6	26.00%
40 - 50	20	11	31.00%
50 -60	15	7	22.00%
60 -70	19	1	20.00%
Total	75	25	100.00%

The study included the patients from age group 20-70 years **Table 1** represents age and gender distribution in the patients. In this study it was observed that maximum (20%) male patients were from age group 30-40 years & 40-50 years. The maximum (11%) female patients were in the age group of 40-50 years.

Table 2 - Pittsburgh Sleep Quality Index (PSQI)

PSQI	Frequency	Percentage
<5	26	26.00%
≥5	74	74.00%

Table 2 represents the PSQI in which 74% of patients had a ≥5 score which indicates poor sleepers. The clinimetric and clinical properties of the PSQI suggest its utility both in psychiatric clinical practice and research activities^[10].

Table 3 - Epworth sleepiness scale

Epworth Sleepiness Score	Frequency	Percentage
0 - 7	63	63.00%
More than 7	37	37.00%
Total	100	100.00%

The ESS is a brief, self-administered questionnaire that asks eight questions about how likely it is to fall asleep in everyday situations

Table 3 represents the Epworth sleepiness scale maximum of 37 % of

participants having score more than 7. The study reported by **Jennifer Boyes** et al stated that there was a significant trend for higher age to be associated with higher ESS scores for male subjects^[11]

Table 4 – Insomnia severity Index

Insomnia severity Index	Frequency	Percentage
More than 7 (Clinical Insomnia)	96	96.00%
Less than 7 (No clinically significant insomnia)	4	4.00%
Total	100	100.00%

Table 4 represents the Insomnia Severity Index in which a maximum of 96 % of participants had more than 7 ISI and 4 % of participants has less than 7 ISI.

Charles M. Morin et al reported 95% ISI which was consistent with the current study.^[12]

Table 5 – Drug Abuse study

Drug Abuse	Patients (n)	Percentage (%)
Alcohol	54	54.00 %
Other substances	46	46.00%
Total	100	100.00%

Table 5 represents the percentage of drug abuse cases in the study. 54 % of the cases were addicted by alcohol & 46 % cases were addicted to other substances. **Ricardo E. Jorge** reported 38.8 % alcohol abuse patients in his study.^[13]

Table 6 - Correlation of LOC with ESS, PSQI, ISI

Correlation of LOC		ESS	PSQI	INSOMNIA SEVERITY INDEX
LOC	Pearson Correlation	.337**	-0.105	0.137
	Sig. (2-tailed)	0.001	0.297	0.175

Pearson Correlation analysis test is applied to study the correlation of LOC with ESS, PSQI, ISI.

Table 6 represents the Correlation of LOC with ESS, PSQI, and ISI which states a positive correlation with ESS with a p-value of 0.001 which signifies that an increase in LOC will enhance ESS.

Table 7 - Correlation of GCS with ESS, PSQI, ISI.

		ESS	PSQI	INSOMNIA SEVERITY INDEX
GCS	Pearson Correlation	-.220*	0.127	-0.167
	Sig. (2-tailed)	0.028	0.207	0.097

Table 7 represents the Correlation of GCS with ESS, PSQI, and ISI. GCS has a positive correlation with ESS with p value 0.028 which is <0.05 & signifies that an increase in GCS will increase ESS.

Table No.8 Correlation of Site of injury with PSQI, ISI, ESS

Correlation of Site of injury		PSQI	INSOMNIA SEVERITY INDEX	ESS
Right Lobe	Pearson Correlation	.213*	.250*	-.347**
	Sig. (2-tailed)	.034	.012	.000
Left Lobe	Pearson Correlation	.130	-.102	-.290**
	Sig. (2-tailed)	.197	.312	.003
Both Right and Left Lobes	Pearson Correlation	-.023	-.056	.048
	Sig. (2-tailed)	.822	.580	.636

Table No. 8 represents the Correlation of Site of injury with PSQI, ISI, and ESS which shows a positive correlation with right lobe and ESS with left lobe with p value .003 which is < 0.05 which indicates statistical significance.

CONCLUSION

The study concludes that patients with traumatic brain injury with substance abuse faces the problem of sleep disorders. TBI-related substance abuse is a major issue that can significantly alter long-term outcomes and the risk for repeated injuries. The Components of PSQI, ISI, ESS, LOC, and GCS are all intercorrelated to each other in TBI patients with substance abuse. There are very less studies on substance

abuse in Sleep related disorder in Traumatic Brain Injury so more investigation on the study will help to reduce the problem.

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