

A STUDY OF QUALITY OF SLEEP IN PEOPLE WITH MENTAL ILLNESS WITH SIGNIFICANT CLINICAL IMPROVEMENT

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ABSTRACT

BACKGROUND

Sleep disturbances have become a common co-morbid condition in psychiatric illnesses. Even after treating the immediate psychiatric symptoms, some individuals have difficulties in sleep and their quality of sleep is altered which further affects functional disability and quality of life of the patient.

Aims and Objectives- To study the quality of sleep in people with mental illness with significant clinical improvement.

MATERIALS AND METHODS

Clinical Global Impression- Global Improvement (CGI-I) Scale and Pittsburgh Sleep Quality Index (PSQI) scale were used for the study. Patients attending review outpatient department of Tertiary Care Hospital, Hyderabad were selected as subjects, many of them being psychotic spectrum, mood disorder and alcohol-dependent patients. Patients who scored < 4 on CGI-I scale were taken as subjects and PSQI was calculated. Out of 109 population size, 86 subjects meeting CGI-I score < 4 were taken and PSQI for each subject was calculated. PSQI total <= 5 indicates good sleep quality. PSQI total >= 5 indicates poor sleep quality. SPSS Software version 22 was used. Statistical analysis using Chi-square test, ANOVA was done, and Pearson co-relation test was done to find relation between sleep quality and medicine-induced sleep.

RESULTS

PSQI total was <= 5 in 33 patients. PSQI total was > 5 in 53 patients. PSQI mean was calculated to be 7.65. Pearson Co-relation Coefficient (PCC) for sleep quality and medicine-induced sleep was found to be 0.179. Age is negatively co-related to medicine-induced sleep and positively co-related to CGI-I score.

CONCLUSION

Out of 109 patients, 86 patients scored < 4 on CGI-I scale, 33 patients were having good sleep quality and 53 patients were having poor sleep quality. PCC of 0.179 indicates positive co-relation between sleep quality and medicine-induced sleep. Further research is needed to study co-morbid sleep disturbances in psychiatric illnesses.

KEY WORDS

Quality of Sleep, Pittsburgh Sleep Quality Index, Clinical Global Impression- Global Improvement Scale, Psychiatric Patients.

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BACKGROUND

Sleep disturbances have become a common co-morbid condition in psychiatric illnesses. Even after treating the immediate psychiatric symptoms, some individuals have difficulties in sleep and their quality of sleep is altered which further affects functional disability and quality of life.⁽¹⁾ Hence, there is a need to assess the Quality of Sleep in clinically improved psychiatric patients, so that the extent of sleep disturbances can be assessed and treated appropriately. There appears to be a cyclical relationship between sleep disturbance and medical or psychiatric illness. For example, worsening sleep problems can lead to exacerbated psychiatric symptoms and daytime distress.⁽²⁾

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Sleep disturbance is prevalent in schizophrenia, during both psychosis and remission. Schizophrenia patients suffer from at least one type of sleep complaint such as difficulty falling asleep, early morning awakening, awakening during the night, not sleeping soundly and having increased time in bed.⁽³⁾

Bipolar disorder (BD) is a serious, chronic and recurring condition in which sleep disturbance is a common symptom regardless of phase of illness. Sleep disturbance is frequently the last symptom to resolve as an affective episode finishes, although for many individuals it does not fully remit and remains a persistent inter-episode symptom. Reduction in sleep time is a cardinal feature of mania.⁽⁴⁾ This observation, and evidence that sleep deprivation can precipitate mania in patients with bipolar disorder has led to the hypothesis that sleep reduction is central to the evolution of mania.⁽⁵⁾ According to this model, individuals with bipolar disorder respond to sleep loss with elevation in mood, energy and goal-directed behaviour along with a further decrease in sleep. Sleep disturbance is the most recognised prodromal symptom of mania⁽⁴⁾ and is one of its diagnostic criteria, and improvement in sleep is an important therapeutic target in mania as it often heralds the re-stabilisation of the current mental state.⁽⁶⁾ Likewise, sleep problems are reported in 50-

90% of patients with syndromal or sub-syndromal depressive symptoms in BD.⁽⁶⁾

Insomnia is extremely common among those who suffer from alcohol dependence and/ or abuse, where its prevalence is estimated to be 36-72%. It is believed that the sleep disturbance stems from a rebound of wakefulness occurring as the effects of alcohol, which has sleep promoting effects wear off.⁽⁷⁻⁹⁾ Several longitudinal studies suggest that those with insomnia are at increased risk for the development of subsequent alcohol use problems compared to those without disturbed sleep.⁽¹⁰⁾

Aims and Objectives

Aims

To study the quality of sleep in people with mental illness with significant clinical improvement.

Objectives

- To differentiate people with mental illness into good quality sleepers and poor-quality sleepers.
- To find out the relation between quality of sleep and medicine-induced sleep.

MATERIALS AND METHODS

Study Design

Cross-sectional study.

Sampling Technique

Convenient sampling method.

Period of Study

2 months.

Place of Study

Tertiary Care Hospital, Hyderabad.

Source of Data

Patients attending Review Outpatient Department of Tertiary Care Hospital, HYD.

Tools

Pittsburgh Sleep Quality Index.

The PSQI is an effective instrument used to measure the quality and patterns of sleep. It differentiates "poor" from "good" sleep by measuring seven subscales: Subjective Sleep Quality, Sleep Latency, Sleep Duration, Habitual Sleep Efficiency, Sleep Disturbances, Use of Sleeping Medication and Daytime Dysfunction over the last month. The client self-rates each of these seven areas of sleep by answering nine questions. Scoring of answers is based on a zero to three scale, and a score of three reflects the negative extreme on the Likert Scale. A global sum of "5" or greater indicates a "poor" sleeper. The PSQI has internal consistency and a reliability coefficient (Cronbach's alpha) of 0.83 for its seven components. Numerous studies using the PSQI have supported high validity and reliability.⁽¹¹⁾

Clinical Global Impression- Global Improvement Scale (CGI-I Scale)

The CGI global improvement measure (CGI-I) is rated from 1 (very much improved) to 7 (very much worse). CGI

improvement scale (CGI-I) has been widely utilised as an efficacy measure in clinical drug trials in different mental disorders [e.g. depression, schizophrenia]. Its popularity is mainly based on its conciseness and easiness of administration. It is widely accepted and some studies presented evidence arguing that the CGI is a valid assessment instrument.⁽¹²⁾

IBM SPSS software is used for statistical analysis version 22.

Inclusion Criteria

- Age: 18 - 60 years
- Gender- Male and Female.
- Patients scoring < 4 on CGI-I scale.

Exclusion Criteria

- Patients with organic illnesses.
- Patients with primary insomnia.

Procedure

109 participants attending Review Outpatient Department of Institute of Mental Health, Hyderabad were included in the study. Patients mainly included were those belonging to psychotic spectrum disorders, mood disorders, mental retardation and alcoholism. CGI-I (Clinical Global Impression scale) was used to select patients and those who have scored <4 were taken as subjects. A total of 86 patients have scored <4 on CGI-I scale. *Pittsburgh Sleep Quality Index (PSQI)* scale was used to assess the quality of sleep in the patients who have scored < 4 on CGI-I scale. PSQI score for each of the participant was obtained and differentiated into poor sleep quality and good sleep quality patients.

Statistical Analysis

PSQI mean was obtained using IBM SPSS software for Statistical analysis version 22. Socio-demographic data of the patients was obtained using frequencies, descriptive statistics. Chi-square test was done to verify differences between the categorical variables. Means for scales were calculated. ANOVA test was done to find out variance between continuous variables. Pearson co-relation test was done to see the co-relations between different parameters.

P-value was set at significance of < 0.05.

RESULTS

Our study revealed many important findings. Table 1 shows the frequency and percentage of males and females in our study. Table 2 shows the Chi-square test for the socio-demographic data of the patients comparing the variable sex with marital status, occupation, socio-economic status, education and domicile status of the patients. Chi-square was statistically insignificant for the diagnosis groups. Table 3 shows the Means and Standard deviations of Age, PSQI, CGI-I and Medicine-induced sleep for both females and males. Table 4 shows the Means and Standard Deviations of Age, PSQI, CGI-I and Medicine-induced sleep for Schizophrenia, BPAD (Bipolar Affective Disorder), Alcohol related disorders, Mental Retardation, Depression, Schizoaffective disorder and Psychosis NOS. It was found out that only Age is a significant parameter and F-values obtained indicate that there is no much variance in the PSQI, Age, CGI-I and medicine-induced

sleep values which is shown in Table 5. Figure 1 shows Mean plot for Age distribution among various Diagnosis groups. Table 6 shows the co-relations between Age, PSQI, CGI-I, medicine-induced sleep. Pearson's co-relation test was done. Age is negatively co-related to medicine-induced sleep, which implies that higher the age lower is the need for medications to induce sleep. PSQI score is positively co-related to CGI-I score, which indicates that better the improvement in the clinical symptoms the better the quality of sleep.

Positive co-relation was also found in between PSQI and medicine-induced sleep, but the test is statistically insignificant probably due to small sample size.

Out of 109 participants, 86 patients have met CGI-I rating score < 4. Out of 86 patients, Global PSQI score was <= 5 in 33 patients and Global PSQI score was > 5 in 53 patients indicating good quality of sleep in 33 patients and poor quality of sleep in 53 patients as shown in Table 7.

	Frequency	Percentage
Males	46	53.5
Females	40	46.5

Table 1. Frequency and Percentage of Males and Females

		Sex		Chi-Square Value	P-value	Total
		Male	Female			
Marital Status	Married	24	28	7.470	0.024	52
	Unmarried	20	7			27
	Divorced/ Separated	2	5			7
Education	Literate	25	13	4.141	0.042	38
	Illiterate	21	27			48
Occupation	Semi-profession	5	1	14.304	0.014	6
	Clerical, Shop owner, Farmer	7	3			10
	Skilled worker	9	6			15
	Semi-skilled worker	14	6			20
	Unskilled worker	6	7			13
	Unemployed	5	17			22
Socio-Economic Status	Upper middle	9	5	3.709	0.295	14
	Lower middle	18	11			29
	Upper lower	7	6			13
	Lower	12	18			30
Domicile	Urban	21	11	3.017	0.082	32
	Rural	25	29			54

Table 2. Socio-Demographic Data of Patients

	Sex	Age	PSQI*	CGI-I**	Medicine-Induced Sleep
Females	Mean	36.65	8.75	1.90	1.525
	N	40	40	40	40
	Std. Deviation	10.798	4.695	.871	1.2808
Males	Mean	35.91	6.70	1.91	.674
	N	46	46	46	46
	Std. Deviation	9.647	3.921	.839	1.0340
Total	Mean	36.26	7.65	1.91	1.070
	N	86	86	86	86
	Std. Deviation	10.144	4.395	.849	1.2251

Table 3. Means and Standard Deviations of Age, PSQI, CGI-I and Medicine-Induced Sleep for Males and Females

PSQI*- Pittsburgh Sleep Quality Index, CGI-I**- Clinical Global Impression- Improvement, N- Frequency

Diagnosis		Age	PSQI*	CGI-I**	Medicine-Induced Sleep
Schizophrenia	Mean	36.40	7.37	1.80	.971
	N	35	35	35	35
	Std. Deviation	8.510	4.222	.868	1.2244
BPAD#	Mean	34.19	8.00	1.92	1.115
	N	26	26	26	26
	Std. Deviation	7.808	4.858	.796	1.2108
Alcohol Related	Mean	41.62	6.38	1.77	.615
	N	13	13	13	13
	Std. Deviation	14.009	3.305	.832	1.0439

Depression	Mean	36.80	9.20	2.60	1.600
	N	5	5	5	5
	Std. Deviation	12.677	5.541	.548	1.5166
Mental Retardation	Mean	44.33	8.00	1.67	1.000
	N	3	3	3	3
	Std. Deviation	15.144	4.583	1.155	1.0000
Schizoffective Disorder	Mean	22.50	14.50	3.00	2.000
	N	2	2	2	2
	Std. Deviation	.707	.707	.000	1.4142
Psychosis NOS	Mean	26.00	5.00	2.00	3.000
	N	2	2	2	2
	Std. Deviation	5.657	1.414	1.414	.0000
Total	Mean	36.26	7.65	1.91	1.070
	N	86	86	86	86
	Std. Deviation	10.144	4.395	.849	1.2251

Table 4. Table showing Means and Standard Deviations of Age, PSQI, CGI-I and Medicine-Induced Sleep for Various Diagnoses

PSQI*- Pittsburgh Sleep Quality Index, CGI-I**- Clinical Global Impression- Improvement, N- Frequency, BPAD#- Bipolar Affective Disorder.

	F	P-value
Age	2.238	.048
PSQI*	1.295	.269
CGI-I**	1.334	.252
Medicine-Induced Sleep	1.581	.164

Table 5. ANOVA (Analysis of Variance) amongst different Diagnostic Groups

PSQI*- Pittsburgh Sleep Quality Index, CGI-I**- Clinical Global Impression- Improvement, F- ANOVA Coefficient Value.

Correlations					
		Age	PSQI	CGI-I	Medicine Induced Sleep
Age	Pearson Correlation(r) p-value	1	-.035 0.748	.055 0.617	-.213 .049
PSQI*	Pearson Correlation	-.035 0.748	1	.578 .000	.179 0.098
CGI-I**	Pearson Correlation	.055 0.617	.578 .000	1	.052 0.637
Medicine Induced Sleep	Pearson Correlation	-.213 .049	.179 0.098	.052 0.637	1

Table 6. Correlations between Age, PSQI, CGI-I, Medicine-Induced Sleep

PSQI*- Pittsburgh Sleep Quality Index, CGI-I** - Clinical Global Impression - Improvement

	Males	Females	Total
PSQI <= 5	22 (50%)	11 (26.2%)	33
PSQI > 5	22 (50%)	31 (73.8%)	53

Table 7. Frequency and Percentages of PSQI Scores of Males and Females

DISCUSSION

This study differentiated good sleepers and poor sleepers. PSQI score was <= 5 in 33 subjects and > 5 in 53 subjects. PSQI score was <= 5 in 22 males and > 5 in 22 males. PSQI score was <= 5 in 11 females and > 5 in 31 females. Quality of sleep was equally good and poor in males, i.e. 50% were having good quality sleep and 50% were having poor quality sleep. Whereas in females 26.2% were good quality sleepers and 73.8% were poor quality sleepers. A study conducted by Michael Ritsner et al 2004, also differentiated between good sleepers and poor sleepers and also compared the quality of sleep with quality of life,⁽¹³⁾ which was not done in our study. In this study it was found out that diagnosis is independent of marital status, occupation, socio-economic status, education and domicile status of the patient. ANOVA test done indicates that there is no much variance in the PSQI, Age, CGI-I and medicine-induced sleep values. Pearson co-relation test revealed that higher the age of the individual, lower the need

for medications to induce sleep. Positive co-relation between age and CGI-score indicates that higher the age of the individual, more the global improvement in symptoms which further implies that older people have good prognosis and younger age groups have bad prognosis. Statistically insignificant p-value was obtained between Age and PSQI score in this study when compared to a study done by Brabbins et al 1993⁽¹⁴⁾ and Taylor et al 2005,⁽¹⁵⁾ in which older adults had a decreased quality of sleep. With positive co-relation between PSQI score and CGI-I score, it explains that with clinical improvement in psychiatric symptoms, the quality of sleep also improves. This study also showed statistical insignificance between sleep quality and medicine-induced sleep. Sleep quality is good in patients who are using medications, either benzodiazepines or anti-psychotics, but are not dependent on them for sleep. This study also showed that Quality of Sleep is the same independent on the diagnosis of the patient, i.e. quality of sleep is equally affected

in all the patients in this study. But among the diagnoses Schizoaffective disorder patients had worse quality of sleep when compared to Schizophrenic group, which was also seen in a study conducted by John R Hofstetter et al 2005 in their study of Quality of Sleep in patients with schizophrenia and its association with quality of life and coping.⁽¹⁶⁾

An early investigation conducted by Detre T et al in 1966 on psychiatric inpatients found that 83% of 12 acutely ill schizophrenia patients and 47% of 17 patients with chronic psychosis had at least one type of sleep complaint.⁽¹⁷⁾ But the study has not shown that quality of sleep has effect on the improvement in symptoms, which was shown in our study. A study conducted by Royuela AMJ et al 2002 in a sample of 44 adults with schizophrenia reported poor sleep quality at a rate of 52% using the Pittsburgh Sleep Quality Index,⁽¹⁸⁾ which in our study also poor sleep quality was seen in 35 schizophrenic patients.

A group study conducted by Morin et al in 2011 revealed that sleep disturbance among BD participants was overwhelmingly greater when measured by self-report.⁽¹⁹⁾ Several studies conducted by Skoloda TE et al and Brower KJ et al suggest that those with alcoholism often use alcohol as a means to treat sleep difficulties.⁽²⁰⁾ There was no literature found comparing the quality of sleep and medicine-induced sleep in alcoholics, which was done in this study.

A substantial number of studies conducted by Benca RM et al in 1992, Haffmans PM et al in 1994 and Palmese LB et al in 2011 have reported that sleep continuity disturbances and poor sleep quality detrimentally affect quality of life in patients with schizophrenia even while on stable medication regimens,^(21,22) which was found to be statistically insignificant in our study.

Drawbacks

Small sample size.

CONCLUSION

Positive co-relation between medicine-induced sleep and sleep quality indicates that sleep quality is good in patients who are using medications, either benzodiazepines or anti-psychotics and are dependent on them for sleep. Psychiatric morbidity deters the patient from normal sleep and leads to sleep disturbances and hence the need to assess their sleep quality and further treat the sleep disturbances.

All these observations suggest the need for research into the treatment of co-morbid sleep disturbances and psychiatric disorders.

There appears to be a greater likelihood of successful therapy if the sleep difficulty and co-morbid disorder (i.e. mood disorder, alcoholism or schizophrenia) are simultaneously targeted for treatment.

Future Research

- Further study is required to be done as to why males are good sleepers and females are poor sleepers.
- Future research is aimed to find out the prevalence rates of sleep disturbances in bipolar, schizophrenia and alcoholism patients.

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