

## A STUDY ON BIPOLAR AFFECTIVE DISORDER SUBJECTS UNDER REMISSION – QUALITY OF SLEEP AND QUALITY OF LIFE

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### ABSTRACT

**Objectives:** People affected with bipolar disorder experience sleep disturbances which precedes an episode of depression or mania. The aim of the present study was to assess the quality of sleep and quality of life (QOL) in subjects with euthymic bipolar disorder.

**Methods:** This was a case-control study conducted between April 2015 and September 2015. All subjects in the age of 18–60 years with bipolar affective disorder (BPAD) under remission for at least 6 months were included as cases and healthy volunteers as controls. Mini-international neuropsychiatric interview plus brief interview, Hamilton depression rating scale and young mania rating scale were used to quantify remission. Pittsburgh sleep quality index (PSQI) and Epworth sleepiness scale were used to assess quality of sleep and the WHO quality of life brief version (WHOQOL-BREF) scale was used to assess QOL. Descriptive data were given in summary statistics, Student's t-test to compare means, one-way ANOVA to compare means with variables, Pearson's test for correlation and Chi-square test for qualitative variables were used.  $p < 0.05$  was considered significant.

**Results:** Fifty patients and 51 volunteers were included in the study. The mean age was  $39.62 \pm 11.68$  years, males and females were equal, most were married (82.17%), 34.65% had completed high school, 47.52% were unskilled workers and 73.27% were in upper lower socioeconomic status. About 95.05% did not had family history of psychiatric illness. Euthymic BPAD patients were more unmarried ( $p = 0.033$ ), more unemployed ( $p = 0.0003$ ), less full-time employees ( $p = 0.0001$ ), had more PSQI global score ( $p = 0.0003$ ) and more Epworth sleepiness scale ( $p = 0.0004$ ) than controls. As the duration of remission increased, sleep dysfunction improved ( $p = 0.009$ ). WHOQOL scores were lower in BPAD patients and overall perception of health was lower ( $p = 0.044$ ). BPAD patients had poor sleep hygiene and watched more television in bed, had more cigarettes and had more coffee than tea.

**Conclusion:** Patients with BPAD even when in remission had significant sleep disturbances. Sleep hygiene factors have to be modified to improve sleep dysfunction. Psychosocial interventions are needed to achieve better QOL.

**Keywords:** Bipolar disorder, Quality of life, Quality of sleep.

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### INTRODUCTION

People affected by bipolar disorder experience depressive episodes alternating with periods of mania. In 2019, 40 million people across the world experienced bipolar disorder [1]. Any episode, depressive or manic, is preceded by 1 or 2 weeks of disturbance in sleep activity cycle, goal directed activity, and cognitive or affective function. However, this pattern varies from individual to individual but is mostly always same in the individual [2]. Recovery from a mood episode was defined as at least 8 consecutive weeks either with no symptoms of depression or mania or with only one or two symptoms of a mild degree and no impairment of psychosocial functioning [3].

Recent evidences focus on the significant impairment of bipolar patients in relation to sleep dysfunction, global function reduction, and worse quality of life (QOL), even when they were euthymic. The aim of the present study was to assess the quality of sleep and QOL in subjects with bipolar affective disorder (BPAD) who were under remission.

### METHODS

The present study was a case-control study carried out in BPAD subjects attending the outpatient clinic at Institute of Mental Health, Madras Medical College, Chennai, Tamilnadu, India, between April 2015 and September 2015. The sample size was calculated

as minimum of 35 (with 95% two-sided confidence interval and proportion of cases with poor sleep quality as 63.4%) [4]. This study was approved by Institutional Ethics Committee of Madras Medical College (No. 22052015). Consecutive sampling method was employed in including subjects.

All subjects in the age group of 18–60 years, who fulfilled the DSM – IV (ICD-10) criteria for BPAD who were under remission (last episode at least 6 months earlier), were included in the study after obtaining written informed consent. Subjects who had other major comorbid psychiatric, surgical or medical illness, those who had substance use disorder at dependence level, and those who were not willing to participate in the study were excluded from the study.

All participants were evaluated to rule out medical, surgical illness, or comorbid psychiatric illness (mini-international neuropsychiatric interview-plus brief interview) [5]. Then, the subjects were quantified for remission using Hamilton depression rating scale (HAM-D) [6] and young mania rating scale (YMRS) [7] and those who had scores of HAM-D  $< 7$  and YMRS  $< 4$  for the past 6 months were included as cases and healthy subjects, matched for age and sex, were included as controls after ruling out history of psychiatric illness. All participants were administered questionnaire regarding their quality of sleep (Pittsburgh sleep quality index [PSQI] and Epworth sleepiness scale) [8,9] and QOL (WHO QOL- BREF) [10].

Data entry and statistical analysis was performed with SPSS version 20.0 (IBM, New York, USA). Descriptive data were given in summary statistics, while Student's t-test was used to compare mean values between cases and controls. One-way ANOVA was used to compare means with clinical variables while Pearson's test was used for correlation and Chi-square test was used for qualitative variables.  $p < 0.05$  was considered significant.

## RESULTS

In the present study to analyze quality of sleep and quality of life in patients with bipolar disorder under remission, the final sample included 50 patients as cases and 51 healthy volunteers as controls. The mean age of study population was  $39.62 \pm 11.68$  years. Males and females were nearly equal in the study (52.47%,  $n=53/101$ ). Most of the subjects were married (82.17%,  $n=83/101$ ). More than one-third of the subjects had completed high school (34.65%,  $n=35/101$ ). Nearly half of the subjects were unskilled workers (47.52%,  $n=48/101$ ). Most of the subjects were full time employees (77.23%,  $n=78/101$ ) but most were in the upper lower socioeconomic status (73.27%,  $n=74/101$ ) and lived in semi-urban areas (84.16%,  $n=85/101$ ). Most of the subjects were Hindus (78.21%,  $n=79/101$ ) and most did not had family history of psychiatric illness (95.05%,  $n=96/101$ ).

The mean age of the patients included as cases was  $39.20 \pm 11.81$  years while the mean age of controls was  $40.04 \pm 11.56$  years ( $p=0.719$ ). As shown in Table 1, the patients included as cases and healthy volunteers included as controls were matched adequately in age, sex, domicile, education, and family history.

Among patient with bipolar disorder included as cases, the mean duration of illness was  $15.24 \pm 9.79$  years, mean age of onset was  $24.00 \pm 7.51$  years, and the time from last episode of manic/depressive episode was  $41.54 \pm 31.04$  months. The mean HAM-D was  $1.96 \pm 1.70$  while the mean YMRS was  $0.8 \pm 1.11$ . Antipsychotics (92%,  $n=46/50$ ) and mood stabilizers (84%,  $n=42/50$ ) were the most common drugs used as maintenance therapy in patients.

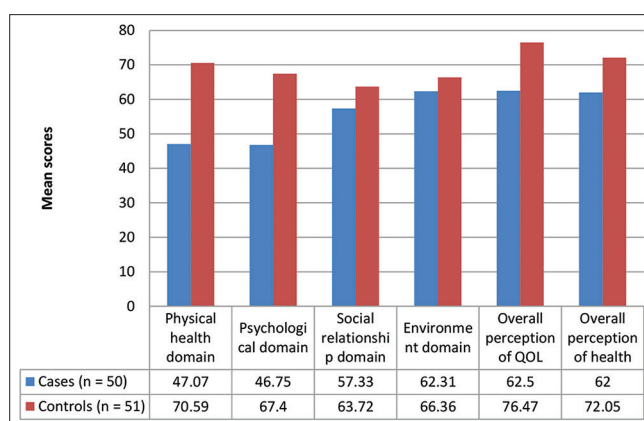
When quality of sleep was assayed, the average PSQI global score and Epworth sleepiness scale were higher in cases when compared to controls (Table 2). When PSQI global score was calculated for sleep dysfunction (score  $\geq 5$ ), euthymic BPAD patients (88%,  $n=44/50$ ) had more sleep dysfunction than healthy controls (53%,  $n=27/51$ ). This resulted in an odds ratio of 6.52 which was statistically significant ( $p < 0.05$ ). It was also seen that as the duration of illness increased, there was an increasing trend in PSQI global score from  $9.00 \pm 1.73$  (when  $< 5$  years) to a score of  $11.73 \pm 4.37$  (when  $> 20$  years) which was statistically significant ( $p=0.0001$ ). Epworth sleepiness scale also showed an increase in score from 1.2 (when  $< 5$  years) to 5.0 (when  $> 10$  years) which was again statistically significant ( $p=0.038$ ).

In subjects who had manic episodes, it was observed that as the number of manic episodes increased, PSQI global score increased from  $9.40 \pm 2.23$  for single episode to  $17.00 \pm 0.00$  for six or more episodes which was significant ( $p=0.0003$ ). This difference in sleep dysfunction was not observed in patients with depressive episodes ( $p=0.174$ ). It was also observed that as the duration of last episode increased, the degree of sleep dysfunction decreased in intensity from a score of  $11.9 \pm 3.23$  in duration of last episode  $< 1$  year to a score of  $6.67 \pm 4.77$  in patients with last episode  $> 5$  years and this was statistically significant ( $p=0.009$ ).

When QOL was assayed euthymic BPAD patients had decreased WHOQOL-BREF scores in all domains (Overall score 62.5 vs. 76.47) (Fig. 1). Overall perception of health was lower in patients when compared to controls, as their age increased ( $r = -0.286$ ,  $p=0.044$ ). While differences in QOL score were not statistically significant between genders ( $p=0.991$ ), socioeconomic status ( $p=0.109$ ), and marital status ( $p=0.260$ ) in cases, psychological domain scores and social relation domain scores were better in married patients ( $p=0.001$  and  $0.032$ ). The QOL scores showed an increasing trend in patients

**Table 1: Comparison of sociodemographic profile between cases (patients) and controls (healthy volunteers)**

Sociodemographic profile	Cases (n=50)		Controls (n=51)		p-value
	n	%	n	%	
Gender					
Male	26	52.0	27	52.9	0.925
Female	24	48.0	24	47.1	
Marital status					
Single	13	26.0	5	9.8	0.033
Married	37	74.0	46	90.2	
Education					
Illiterate	3	6.0	0	0.0	0.239
Primary	6	12.0	5	9.8	
Middle	12	24.0	19	37.3	
High	20	40.0	15	29.4	
Graduate	9	18.0	12	23.5	
Occupation					
Unemployed	12	24.0	0	0.0	0.0003
Unskilled	23	46.0	25	49.0	
Semiskilled	12	24.0	24	47.1	
Skilled	3	6.0	2	3.9	
Employment status					
Full time	27	54.0	51	100.0	0.0001
Part time	9	18.0	0	0.0	
Home maker	9	18.0	0	0.0	
Unemployed	3	6.0	0	0.0	
Night shift	2	4.0	0	0.0	
Socioeconomic status					
Lower	5	10.0	0	0.0	0.017
Upper lower	38	76.0	36	70.6	
Lower middle	7	14.0	15	29.4	
Religion					
Hindu	38	76.0	41	80.4	0.759
Muslim	4	8.0	2	3.9	
Christian	8	16.0	8	15.7	
Domicile					
Rural	4	8.0	0	0.0	0.067
Semi-urban	42	84.0	43	84.3	
Urban	4	8.0	8	15.7	
Family history					
Parents	3	6.0	2	3.9	0.088
Nil	47	94.0	49	96.1	



**Fig. 1: Comparison of mean the WHO quality of life brief version scores in various domains between euthymic bipolar affective disorder patients as cases and healthy volunteers as controls**

with more episodes of hospitalization (F-score=6.096,  $p=0.001$ ). In the present study, it was also seen that in euthymic BPAD patients who had more manic episodes, the QOL scores were lower indicating poor QOL and health (F-score=8.262,  $p=0.0002$ ). Similarly, in patients who had more depressive episodes, the QOL scores were lower (F-score=24.998,  $p=0.0001$ ). As the duration of remission increased, the QOL scores

**Table 2: Comparison of quality of sleep scores between cases ( euthymic BPAD patients) and controls (healthy volunteers)**

Variables	Group	n	Mean	SD	t-value	p-value
PSQI Global score	Cases	50	9.54	4.13	7.994	0.0003
	Controls	51	4.47	1.84		
Epworth sleepiness scale	Cases	50	3.44	2.62	4.842	0.0004
	Controls	51	1.29	1.76		

were better (57.5 in <1 year and 66.66 in >5 years,  $p=0.008$ ). When QOL scores were compared with sleep scores, as sleep dysfunction increased, QOL declined as seen with PSQI global score ( $r=-0.328$ ,  $p=0.001$ ), and Epworth sleepiness scale ( $r=-0.285$ ,  $p=0.004$ ).

In the study of sleep hygiene leading to sleep dysfunction, euthymic BPAD patients watched television while in bed ( $p=0.021$ ), had more cigarettes per day ( $p=0.031$ ), smoked cigarettes after 5 pm ( $p=0.013$ ), and had more coffee than tea ( $p=0.0001$ ) compared to healthy controls who read books while in bed ( $p=0.003$ ), did paper work in bedroom ( $p=0.003$ ), and had more tea ( $p=0.0002$ ).

## DISCUSSION

Even though the present study was structured in accordance with previous studies, the novelty lies in the comparison of QOL with quality of sleep in euthymic BPAD patients and also the study of sleep hygiene and its role in sleep dysfunction. In the present study, cases and controls were matched for age and sex. It was found in sociodemographic profile that few patients were unmarried, unemployed, and in lower socioeconomic status which indicates the influence of illness and drugs used in maintenance therapy, even when in remission and euthymic state.

Sleep dysfunction was seen in 88% of patients with euthymic BPAD which was similar to the results obtained in the study by Rocha *et al.* (82.9%,  $n=87/105$ ) [4]. These patients had decreased subjective sleep quality, increased sleep latency, and decreased sleep duration. Daytime dysfunctions were more in BPAD patients and most of them needed support of medications to maintain their sleep. Moreover, overall disturbance in sleep intensity was very high when compared to controls. These findings were similar to the results in the study by Rocha *et al.* [4] and Walz *et al.* [11].

In the present study, when the patients had more manic episodes, the intensity of sleep disturbances increased even in euthymic period with high PSQI scores. This was similar to the review by Harvey *et al.* who found that insomnia was common during manic episodes [12]. When sleep dysfunction and quality were compared with time from last episode of BPAD, it was observed that sleep quality and QOL was improved, in patients who were stabilized for a long period of time. This was similar to the findings in the meta-analysis by Pascual-Sánchez *et al.* [13].

When QOL in euthymic BPAD patients was compared with healthy subjects, there was significant reduction in all domains of QOL. This was similar to the results obtained in the study by Parikh and Panse. who found decreased QOL in elderly patients with BPAD and Sylvia *et al.* who found lower QOL in 482 BPAD participants [14,15]. When the number of episodes increased, QOL worsened and when remission is stabilized for more than 5 years (time from last episode), QOL improved significantly. This was similar to the results in the review by Pascual-Sánchez *et al.* [13]. When quality sleep and QOL are compared, there was an overall reduction in all domains.

## Limitations

This was a cross-sectional study and a longitudinal follow-up study would have reduced recall bias. This study was conducted at a tertiary care center and the results may not be generalized to community setting. However, the strength of the present study lies in good hospital

records of studied patients with age and sex matching of cases and controls.

## CONCLUSION

Patients with euthymic BPAD had significant sleep disturbances and daytime dysfunctions. As the duration of illness and number of episodes increased, sleep dysfunction worsened. As the age of onset of BPAD and number of episodes increased, quality of life scores decreased. There are sleep hygiene factors that can be modified which will improve sleep dysfunction. Cognitive behavior therapy like sleep restriction therapy and relaxation training targeting the affected areas of sleep quality can be used before resorting to medications. Psychosocial interventions are needed to achieve better QOL.

## AUTHOR CONTRIBUTION

TS – Conceptualized, designed, and approved the study. RR – Collected and analyzed the data. KM – Analyzed and interpreted data. SP – Compiled and prepared manuscript.

## CONFLICTS OF INTEREST

None declared.

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