Original Research

Dysfunctional Beliefs and Attitudes about Sleep and Its Relation with Insomnia in Three Groups of Psychiatric Patients

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Abstract

Background and Objective: Reports have shown a link between dysfunctional beliefs about sleep and sleep disorders. We investigated the frequency of dysfunctional beliefs about sleep in three groups of patients suffering from psychiatric disorders (patients with major depression, bipolar disorder, and anxiety).

Materials and Methods: In this cross-sectional study, 150 patients with psychiatric disorders referred to psychiatry clinic affiliated to Qazvin University of Medical Sciences, Qazvin, Iran. Fifty patients were selected in each group (anxiety, depression, and bipolar disorder). Two questionnaires of Dysfunctional Beliefs and Attitudes about Sleep (DBAS) and Insomnia Severity Index (ISI) were completed for all patients. Data were analyzed with Student's t, chi-square, analysis of variance (ANOVA), and Pearson correlation tests.

Results: A significant difference was observed between the three groups in the latency to fall asleep at night (P = 0.002) and Pittsburgh Sleep Quality Index (PSQI) ≤ 5 (P = 0.002). Patients with anxiety and bipolar disorder more than other groups believed that insomnia caused loss of life joy (P = 0.010) and the only solution for sleeplessness was medication (P = 0.003), respectively. There was a significant relationship between sleep quality and anxiety (P = 0.030), total sleep time (P = 0.040), sleep latency (P = 0.020), and ISI (P < 0.010) with depression, awakening time during night, and bipolar disorder (P = 0.030).

Conclusion: Patients with psychiatric disorders have high frequency of dysfunctional beliefs about sleep. Regarding the relationship between dysfunctional beliefs about sleep and insomnia, future work is needed for better treatment.

Keywords: Bipolar disorder; Depression; Anxiety; Beliefs; Attitudes; Sleep

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Introduction

Sleep as a complex pattern is one of the most important biological cycles (1). Sleep is a natural process during which, the reduction or absence of consciousness, relative decline of sensory activity, and inactivity of voluntary muscles occur (1, 2). There are more than 80 different types of sleep disorders (3). Researchers have shown that sleep disorders and lack of good quality of sleep reduce activity of immune system and hypothalamic-pituitary-adrenal axis (2-4). As a result of these alterations, impaired glucose tolerance, hypertension, and increased risk of cardiovascular events develop (4, 5).

Insomnia is a prevalent sleep disorder that makes falling asleep, staying asleep, or both difficult and it may even happen despite enough sleep time. Insomnia and sleep debt have a wide range of adverse effects on different organ systems (6, 7). Insomnia is frequently associated with different psychiatric disorders, especially anxiety and

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depression. Since both disorders have high prevalence in society, it is more likely to occur together (7-9). Surveys have shown that majority of patients with major depression (more than 90 percent) also suffer from sleep disorders (9, 10). In spite of the strong association between two diseases, researchers have not been able to provide any information on causalities. However, it seems that mood disorders lead to changes in sleep-wake cycles (7-10).

In patients suffering from bipolar disorder, sleep disorders are associated with both phases of the disease including depression and mania (8, 11). In a review article conducted in 2008, it was suggested that the first symptoms in many patients suffering from bipolar disorder (especially in manic phase) were sleep disorders. Treatment of sleep disorders in these patients is also considered a sign of patient treatment. They even suggested that residual insomnia in the euthymic period of bipolar disorder was considered as an evidence of patients' vulnerability to affective relapse (11).

A recent study conducted by Ritter et al. investigated whether sleep disturbance could predict the later onset of bipolar disorder in future. They measured sleep disorders in a representative community sample of young adults. Results showed that poor quality of sleep significantly increased the risk of developing bipolar disorder in future (12).

Another cross-sectional study assessed the prevalence of insomnia in 563 patients with bipolar I and II. Results showed that over 40% of cases suffered from insomnia and 29% from hypersomnia at the same time (8). Previous studies have reported the relationship between dysfunctional beliefs about sleep and insomnia in special groups of patients such as patients suffering from breast cancer. A survey on 41 women with breast cancer identified higher levels of dysfunctional beliefs about sleep in patient group. These beliefs were related to insomnia severity in these patients (13). The present study sought to assess prevalence of dysfunctional beliefs about sleep in three groups of patients with anxiety, depression, and bipolar disease. In addition, this study aimed to assess the relationship between three groups of patients with anxiety, depression, and bipolar disease and severity of insomnia symptoms.

Materials and Methods

This descriptive-analytical study was carried out as cross-sectional. At first, persons that were suspected to have disorders (anxiety, depression, and bipolar disease) were visited by a psychiatrist and then selected for study. Patients with simultaneous anxiety and depression were excluded from the study, considering that the main purpose of this study was on psychiatric patients with sleep disorders Patients with bipolar disorder or depression in the acute phase of the disease, remission phase, follow-up phase, and those undergoing drug therapy or other treatments were included in the study. Then confirmed patients suffering from depression, anxiety, and bipolar disorder were surveyed by a questionnaire.

150 patients were enrolled in this study, including 50 patients suffering from depression, anxiety, and bipolar disorder. All patients who were consecutively admitted to 22 Bahman Hospital, Qazvin, Iran, during September, 2014 and January, 2015 were selected using convenience sampling method, and the sample size was calculated by the observational study formula according to previous study done in this area. The prevalence of sleep disorders in psychiatric patients was considered 30 percent according to previous studies. Type I error was set at 0.05. Participants were assured that they would be enrolled in the study with the personal decision and their personal information would be safe and secure. All participants signed written informed consent for study enrolment.

A questionnaire containing demographic information about age, gender, marital status, and employment status of patients was completed for all patients. Moreover, the questionnaire of Dysfunctional Beliefs and Attitudes about Sleep (DBAS) was completed for all patients. A 16-item version of the scale was used in this study to identify and evaluate different attitudes, expectations, understandings, and cognitions about patients' sleep. The original version of this questionnaire has 30 items, but in this study, we used a short form of the questionnaire (14, 15).

Some questions about dysfunctional beliefs are as follows: 1) need for 8 hours of sleep to feel refreshed next day, 2) distribution of sleep schedule for whole week after one night of sleep deprivation, 3) misconception about causes of insomnia such as a chemical imbalance as the main cause of insomnia, 4) having wrong behavior to manage insomnia such as staying in bed and trying harder to sleep after a night of insomnia, and other ques-

tions. All patients responded to the questions according to a 10-point Likert scale with higher scores indicating stronger dysfunctional beliefs about sleep. Score 0 indicates "strongly disagree" with items and score 10 indicates "strongly agree" with items. In addition, the total score of DBAS was calculated and mean of scores was detected for each group of patients.

The DBAS questionnaire was translated into Farsi and back translated into English. The process was conducted by two specialists in sleep medicine and psychiatry, separately. The English back-translation was similar to the original edition of DBAS questionnaire. The reliability for DBAS questionnaire was determined through completion of the questionnaire by 15 patients again after two weeks. Cronbach's alpha coefficient of 0.79 was calculated.

The Farsi versions of Insomnia Severity Index (ISI) and Pittsburgh Sleep Quality Index (PSQI) were used to assess insomnia and sleep quality in the patients. The validity and reliability of Farsi versions of ISI and PSQI questionnaires had been assessed in previous studies (6, 16).

SPSS software (version 19, SPSS Inc., Chicago, IL, USA) was used for data analysis. Mean and percentage of data was calculated with descriptive statistics. Student's t-test was used to test the hypothesis about the mean of a community, and also chi-square (χ^2) test for measuring the difference between the frequencies of the outcomes of variables was applied. In this research, analysis of variance (ANOVA) was used to check if the means of three or more groups were significantly different from other groups. Pearson correlation was used for measuring the association between groups in analytical statistics. Significance level was set at P-value less than 0.05.

Results

In this study, 150 patients who were admitted to 22 Bahman Hospital, Qazvin University of Medical Sciences were selected (age range: 30-45 years) who were suffering from generalized anxiety disorder (GAD), major depression, and bipolar disorder. Demographic information and data about hours of sleep in the patients are demonstrated in table 1. In addition, patients' information about their quality of sleep and insomnia is presented in table 1. As the table 1 shows, there were significant differences between the three groups of patients (patients with anxiety, patients with depression, and patients with bipolar disorder) in terms of sleep latency at night (P = 0.002) and PSQI ≤ 5 (P = 0.002). The least and most latency time to sleep was observed in patients with anxiety and bipolar disorders, respectively. The difference in duration of awakening was not statistically significant (P = 0.092) at night between the three groups of patients, yet the most time for awakening was seen in patients with depression. In relation to the quality of sleep during the past month, three groups reported a high prevalence of poor sleep quality. Patients with anxiety and depression showed significantly higher percentage of poor sleep quality (Table 1).

Table 1. Demographic information in three groups of patients

Variables	Patients with anxiety (n = 50)	Patients with depression (n = 50)	Patients with bipolar disorder (n = 50)	P-value
Age (year)	33.02 ± 10.20	38.04 ± 15.80	37.20 ± 8.60	0.070
Gender				0.910
Men	32 (64.0)	30 (60.0)	31 (62.0)	
Women	18 (36.0)	20 (40.0)	19 (38.0)	
Employment				0.080
Employed	24 (48.0)	23 (46.0)	33 (66.0)	
Unemployed	26 (52.0)	27 (54.0)	17 (34.0)	
Marital status				0.400
Married	32 (64.0)	36 (72.0)	38 (74.0)	
Single	18 (36.0)	14 (28.0)	12 (24.0)	
Duration of sleep at night (hour)	6.60 ± 2.05	7.00 ± 1.80	7.00 ± 1.60	0.510
Latency to sleep at night (minute)	18.40 ± 9.70	23.80 ± 12.50	37.10 ± 16.40	0.002
Duration of awakening at night (minute)	19.90 ± 12.80	41.00 ± 21.60	24.20 ± 16.50	0.092
PSQI				0.002
≤ 5	20 (35.1)	10 (17.5)	27 (47.4)	
> 5	30 (32.3)	40 (43.0)	23 (24.7)	
ISI	11.60 ± 5.30	11.90 ± 6.20	10.40 ± 3.90	0.310

Data are presented as mean ± standard deviation (SD) or number and percent
PSQI: Pittsburgh Sleep Quality Index; ISI: Insomnia Severity Index

Table 2. Results for Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS) in three groups of patients

Number of questions	Anxiety group (n = 50)	Depression group (n = 50)	Bipolar disorder group (n = 50)	P-value
Question 1	9.6 ± 0.5	9.2 ± 1.2	9.4 ± 0.9	0.700
Question 2	8.5 ± 1.1	4.4 ± 1.3	7.6 ± 1.8	0.320
Question 3	7.8 ± 1.7	7.8 ± 1.7	8.6 ± 1.3	0.310
Question 4	6.6 ± 2.1	6.8 ± 1.9	6.6 ± 2.1	0.980
Question 5	7.4 ± 1.8	7.6 ± 1.6	7.4 ± 1.7	0.900
Question 6	4.1 ± 2.1	4.8 ± 2.2	5.8 ± 2.1	0.110
Question 7	6.2 ± 2.2	6.1 ± 2.1	6.4 ± 1.9	0.880
Question 8	5.6 ± 2.1	4.6 ± 2.1	5.1 ± 2.2	0.690
Question 9	7.4 ± 1.8	7.4 ± 1.7	7.4 ± 1.8	0.880
Question 10	7.6 ± 1.7	6.2 ± 2.1	6.6 ± 2.1	0.620
Question 11	6.1 ± 2.1	5.6 ± 1.8	7.4 ± 1.7	0.070
Question 12	6.1 ± 1.7	7.6 ± 1.6	7.4 ± 1.6	0.610
Question 13	5.8 ± 2.1	5.2 ± 1.9	6.2 ± 2.1	0.450
Question 14	8.0 ± 1.4	6.4 ± 1.6	5.8 ± 2.2	0.010
Question 15	3.6 ± 2.1	4.3 ± 2.1	6.5 ± 2.1	0.003
Question 16	4.8 ± 2.1	4.6 ± 2.2	6.3 ± 2.1	0.090
Sum of DBAS	87.4 ± 14.5	84.8 ± 15.8	92.4 ± 16.1	0.120

Data are presented as mean ± standard deviation (SD)

DBAS: Dysfunctional Beliefs and Attitudes about Sleep Scale

Questions:

1. I need 8 hours of sleep a night to feel refreshed and function well during the day, 2. If I do not get enough sleep overnight, I have to make up for it by taking a nap the next day or sleeping longer at night, 3. I'm worried that chronic insomnia will have a detrimental effect on my health, 4. I'm worried about losing control of my sleep, 5. I think that if I sleep badly one night, it will interfere with my daily activities the next day, 6. In order to stay awake during the day and function well, I believe that it is better to use sleeping pills, so that I do not sleep badly at night, 7. If I feel irritated, anxious, or sad during the day, it is because I did not sleep well the night before, 8. I know that if I sleep badly one night, my sleep patterns will be disrupted by the end of the week, 9. If I do not get enough sleep at night, I will have difficulty functioning the next day, 10. I can never predict whether I will sleep well or badly during the night, 11. I have little ability to manage the unintended consequences of poor sleep, 12. When I feel tired and lack energy or do not function well during the day, it is usually because I did not sleep well the night before, 13. I believe that my insomnia is due to a chemical imbalance in my body, 14. I feel that insomnia destroys my ability to enjoy life and prevents me from doing what I have decided to do, 15. Medication is probably the only cure for insomnia, 16. I disrupt my family and social plans after a night of sleep

Results from DBAS questionnaire in three groups of patients are presented in table 2. There were significant differences between three groups on the 14th and 15th questions. In case of question 14, patients with anxiety more than other groups believed that insomnia caused loss of life joy and destroyed their life (P = 0.010). But, in question 15, patients with bipolar disorder more than other groups believed that the only solution for sleeplessness was medication (P = 0.003) (Table 2). Correlation coefficient between DBAS with insomnia and sleep quality in three groups of patients was detected. A significant relationship between sleep quality and anxiety was seen (P = 0.030). Besides, a significant relationship was observed between total sleep time (P = 0.040), sleep latency (P = 0.020), and ISI (P < 0.010) with depression. On the other hand, a significant relationship was observed between awakening time during night (P = 0.030) and bipolar disorder (Table 3).

Discussion

According to results obtained in this study, high frequency of dysfunctional beliefs about sleep was seen in the three groups of psychiatric patients. This information is consistent with another study in which, frequency of these beliefs was studied in patients suffering from depression and mood disorders. In this study, the frequency of DBAS was high and the researchers concluded that the correction of these ideas could improve sleep problems in these patients (17).

Table 3. Correlation coefficient of Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS) with insomnia and sleep quality in three groups of patients

Variables	Total score of DBAS					
	Anxiety group (n = 50)		Depression group (n = 50)		Bipolar disorder group (n = 50)	
	ρ	P-value	ρ	P-value	ρ	P-value
Total sleep time	-0.160	0.270	-0.260	0.040	0.150	0.300
Sleep latency	0.017	0.910	0.330	0.022	-0.160	0.250
Awakening time during night	-0.090	0.540	0.068	0.660	-0.300	0.036
Sleep quality	0.380	0.030	0.130	0.350	-0.089	0.530
ISI	0.450	0.040	0.390	0.005	-0.104	0.470

DBAS: Dysfunctional Beliefs and Attitudes about Sleep Scale; ISI: Insomnia Severity Index

In another study conducted in China, the frequency of these ideas was assessed in patients with major depressive disorders before and after antidepressant treatment. The results showed that after antidepressant therapy, anxiety and depression were improved, but low quality of sleep still persisted. Multiple regression analysis showed that different items from dysfunctional beliefs accounted for important predictors of sleep quality (18).

Another study showed that patients suffering from psychiatric disorders, especially bipolar disorder, were anxious about their quantity and quality of sleep (18, 19). A part of this concern is because they suspect that sleep disorders can flare their illness. Moreover, cognitive behavioral interventions that reduce bedtime worries, rumination, and vigilance can improve sleep disorders and prevent the exacerbation of psychiatric disorders (18-20).

According to table 2, the sum of the DBAS in patients with bipolar disorder was more than the other two groups. This value was also higher in patients suffering from anxiety compared to patients suffering from depression. In previous studies that have been conducted in different types of psychiatric diseases, the frequency and severity of dysfunctional beliefs about sleep was shown higher than other people (1, 13, 18). But based on our research, we did not find an article that compared three groups of bipolar disorder, depression, and anxiety in terms of DBAS.

Although psychoeducation that emphasizes on identification and treatment of sleep disorders is frequently used in patients with bipolar disorder, the importance of stabilization for sleep-wake rhythms in patients with bipolar disorder is completely clear (17, 18). The screening for primary sleep disorders such as obstructive sleep apnea (OSA) and restless legs syndrome (RLS) is recommended in psychiatric diseases, especially patients with bipolar disorder. By this means, it may be possible to prevent the relapse of manic periods (18-20).

The average of sleep hours during night was about seven hours in all groups. In addition, the average time of delay to sleep initiation was about 25 minutes in the three groups that was significantly higher in patients with bipolar disorder ($P = 0.002$). These results are consistent with available information about patients with bipolar disorder (19, 20). The probable cause for this may be a reduced need for sleep and longer sleep onset latency in patients with bipolar disorder during a manic episode (19).

According to the results, patients with major depression had more awakening time during night than the other two groups. But this difference was not statistically significant ($P = 0.092$). In a large study conducted in 2005 on 700 patients, the researchers showed that the most common type of insomnia in patients with depression was maintenance insomnia (21). Besides, the prevalence of poor quality of sleep in three groups of patients was relatively high and the worst quality of sleep was observed in patients with depression. This result is consistent with other studies (21, 22). In a large cohort study that was conducted on 3880 people, a strong association was observed between depressed mood and low quality of sleep (22).

In previous studies, it is suggested that patients suffering from different types of mood disorders have higher rates of inappropriate beliefs about sleep (21, 22). These misconceptions may even remain after treatment for depression and could increase the risk for relapse of mood disorders (18-20).

According to table 3, it can be concluded that in three groups of patients with increasing severity of dysfunctional beliefs about sleep, sleep quality also gets worse. Likewise, patients feel more discomfort and distress with their sleep problems. This correlation is more obvious in group of patients with depression compared to the other groups. This suggests that these patients have unhelpful beliefs about how much they need to sleep. They try to overcome their fatigue and exhaustion by spending more time in bed (19-21).

The present study has some limitations that should be addressed in future studies. First, we did not assess sleep parameters with more objective instruments such as polysomnography (PSG). Further evaluation with PSG is suggested. All findings from this study are from a cross-sectional study. Therefore, more valid design with cohort and clinical trial methods is suggested to provide more accurate information. Moreover, the sample size of this study is relatively small.

Conclusion

Results of this study suggested that a relationship between dysfunctional beliefs about sleep and psychiatric disorders was seen, and more studies are needed to investigate the relationship between the two of them. It is necessary to con-

duct appropriate education for these patients to correct their dysfunctional beliefs about sleep. In this way, we can help to improve sleep quality in these patients.

Conflict of Interests

Authors have no conflict of interests.

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