Sleep Disturbances and Suicidal Behavior in Patients With Major Depression

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Background: The purpose of this study was to examine the association between sleep disturbances and suicidal behavior in patients with major depression (N = 113).

Method: The sleep symptomatology of each patient was ascertained from the Schedule for Affective Disorders and Schizophrenia (SADS) questions concerning sleep in the section on major depression. The patients were retrospectively classified as having hypersomnia (N = 20), insomnia (N = 69), and no sleep disturbance (N = 24). The SADS suicide subscale was used to rate the severity of active suicidality.

Results: The patients with hypersonnia and insomnia had significantly (p < .05) higher scores on the SADS suicide subscale than those without sleep disturbance. We also found that the patients with insomnia and hypersonnia were significantly (p < .001) more likely to become suicidal than the others.

Conclusion: These data demonstrate that both insomnia and hypersomnia are associated with suicidal behavior in patients with major depression.

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R ecently, many authors have considered the implications of sleep disturbances in depressed patients using circadian, neurochemical, and theoretical frameworks.¹ Population and clinical-sample surveys of subjective sleep and mood disturbances suggested that the presence of depressed mood was associated with the severity and persistence of sleep disturbance.² Sleep disturbance, particularly insomnia, can be an early symptom of,

or a marker of vulnerability to, depression.³ Moreover, sleep disturbance may affect many clinical variables in patients with depression. Sleep disturbance, particularly insomnia, has prognostic significance in predicting suicide among patients with affective disorders. Fawcett et al.⁴ considered insomnia to be one of the "modifiable risks" for suicide. However, this issue is still unresolved, and the replication of this finding is needed. In addition, there is a question, Should hypersomnia also be considered a predictor of suicide in major depression? In this study, we examined whether sleep disturbances, either insomnia or hypersomnia, were associated with suicidal tendency in patients with major depression.

METHOD

Subjects comprised 113 inpatients or outpatients consecutively admitted to the major depression research program at the Yüzüncü Yil University Education and Research Hospital Psychiatric Clinic. Inclusion criteria for the study were (1) meeting the DSM-III-R criteria for major depression, (2) an age between 18 and 70 years, (3) good physical health as determined by physical and laboratory examination, (4) no history of psychotic disorders or current substance abuse, (5) absence of sleep apnea symptomatology, and (6) informed consent for participation in the study. Severity of depressive symptoms was assessed with the 17-item Hamilton Rating Scale for Depression (HAM-D).⁵ The mean \pm SD score was 33.8 \pm 6.1.

The sleep symptomatology of each patient was ascertained from the Schedule for Affective Disorders and Schizophrenia (SADS)⁶ questions concerning sleep in the section on major depression. Patients were retrospectively classified as having hypersomnia, insomnia, and no sleep disturbance.

The SADS suicide subscale was used to rate the severity of active suicidality. A patient was classified as being suicidal if he or she had a SADS suicidality score of 3 or higher. This score necessitates that a patient has suicidal ideation. The SADS includes a numerical rating of the severity of the suicidality. This rating ranges from 1 (no suicidality) to 7 (very extreme suicidality).

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All data were reported as the mean \pm SD. For the SADS suicidality score, group data were analyzed using one-way analysis of variance (ANOVA). Post hoc comparisons of three groups (hypersomnia vs. insomnia vs. no sleep disturbance) were done using the Student-Newman-Keuls multiple-range test. The rates of suicidal patients in each group were compared by using chi-square tests (two-tailed). We also provided pairwise contrasts. To provide interrater reliability between two clinicians, the kappa statistic was used. Kappa values higher than 0.75 may be regarded as excellent interrater agreement, those from 0.40 to 0.75 as fair to good agreement, and those below 0.40 as poor agreement.⁷ Analyses were performed using the SPSS for Windows v5.01.



Sixty-nine patients were retrospectively classified as having insomnia, 20 as having hypersomnia, and 24 as having no sleep disturbance. Of 69 patients in the insomnia group, 18 (26%) were men and 51 (74%) were women. Of 20 patients in the hypersomnia group, 9 (45%) were men and 11 (55%) women. Of 24 patients in the no sleep disturbance group, 12 (50%) were men and 12 (50%) women. There was no significant sex difference between the insomnia group and the other two groups ($\chi^2 = 5.68$, df = 2, N.S.). The mean ± SD age of the patients was 32.6 ± 11.3 years, and there was no significant age difference among the three groups (F = 2.35, df = 2.110, N.S.).

The mean suicidality scores of the patients were $4.4 \pm$ 1.3 for the insomnia group, 3.7 ± 1.3 for the hypersomnia group, and 2.8 ± 1.2 for the no sleep disturbance group. An ANOVA revealed a significant variation in SADS suicidality scores across the three groups (F = 13.25,df = 2.110, p < .001). Post hoc comparisons of the three groups with the Student-Newman-Keuls multiple-range test and pairwise contrasts revealed significant differences between all three groups (p < .05). The t value for the insomnia group versus the hypersomnia group was 2.03; for the hypersomnia group versus the no sleep disturbance group was 2.31; and for the insomnia group versus the no sleep disturbance group was 5.07. Thus, the patients with hypersomnia and insomnia had significantly (p < .05)higher scores on the SADS suicide subscale than those without sleep disturbance.

Forty-eight (70%) of the patients with insomnia, 10 (50%) of the patients with hypersomnia, and 6 (25%) of the patients with no sleep disturbance were classified as being suicidal. By chi-square procedure, the rate of suicidal patients was significantly higher in the insomnia and hypersomnia groups versus no sleep disturbance group ($\chi^2 = 14.83$, df = 2, p < .001). When the interrater reliability was examined, there was an excellent agreement (kappa = 0.79). We also examined the rate of presence/absence of hopelessness among the patients. This rate was

65/48 among all patients, 42/27 in the insomnia group; 15/5 in the hypersomnia group, and 8/16 in the no sleep disturbance group. By chi-square procedure, the rate of presence/absence of hopelessness was significantly higher in the insomnia and hypersomnia groups versus the no sleep disturbance group ($\chi^2 = 8.56$, df = 2, p < .05).

DISCUSSION

The present study demonstrates that both insomnia and hypersomnia are associated with suicidal tendency in patients with major depression. An association with insomnia has previously been noted by Fawcett et al.,⁴ whereas the association with hypersomnia has not been reported in the literature.

In a previous study,⁸ we examined the association between sleep quality and suicidality in major depression. We evaluated 41 patients with major depression by using the Pittsburgh Sleep Quality Index (PSQI)⁹ and the SADS suicide subscale. We found that suicidal depressive patients had significantly higher PSQI global scores than nonsuicidal patients. We also found a significant correlation between the SADS suicide subscale scores and most measures of the PSQI.

It may be suggested that there is an association between sleep disturbances and suicidal tendency in patients with major depressive disorder. However, the causality between sleep disturbances and suicidal behavior in depression is controversial. Nevertheless, several hypotheses may help to explain the possible underlying mechanisms of suicidality and sleep disturbance in depression. Serotonin (5-HT) may play a key role in this association. 5-HT plays an important role in sleep regulation.¹⁰ Reports that 5-HT₂ antagonists, like ritanserin, markedly increase slow wave sleep in healthy subjects strengthen the hypothesis that 5-HT plays an important role in sleep regulation.¹⁴

In a retrospective study of electroencephalographic sleep of major depressive patients with and without a history of suicide attempts, Sabo et al.¹² found that suicide attempters had lower delta wave counts in the first NREM sleep period than the others. They speculated about abnormalities in serotonin neurotransmission as a neuropharmacologic link between REM activity increases and a past history of suicide attempts. A recent study¹³ has shown that measures of slow wave sleep were correlated with CSF 5-hydroxyindoleacetic acid (5-HIAA), the principal metabolite of 5-HT levels in patients with major depressive disorders. Thus, it may be speculated that the abnormalities in serotonin neurotransmission or serotonergic dysregulation may play a key role in underlying mechanisms of the association with suicidal tendency and sleep disturbances in depressed patients.

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