Sleep Disturbances in Mood Disorders

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MOOD DISORDERS OVERVIEW

Mood disorders are among the most prevalent and debilitating psychiatric conditions affecting the population worldwide. They make up the second most common category of psychiatric illness following anxiety disorders, and estimates suggest that approximately 12% of individuals meet criteria for a mood disorder during their lifetimes.1 Mood disorders are associated with increased morbidity and mortality from other illnesses and, in 6% to 15% of those affected, can result in eventual suicide.2 The societal burden of mood disorders is enormous, with a projected cost of $14.1 billion for bipolar disorders and $36.6 billion for major depressive disorder in terms of annual

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human capital loss in the United States, where bipolar disorder is associated with 65.5 and unipolar depression with 27.2 annual lost work days per ill worker. A strong association between sleep disturbances and mood disorders has long been acknowledged, and the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), diagnostic criteria reflect their central role in the diagnosis of mood disorders. 4

DSM-5 differentiates what have historically been categorized as mood disorders into bipolar and related disorders and depressive disorders. Mood disorders are distinguished by the presence of mood episodes, which may be mania, hypomania, or depression. The most common depressive disorder is major depressive disorder (MDD). MDD is associated with at least 1 episode of major depression. Up to 85% of people having 1 episode of major depression later develop another episode (ie, recurrent subtype). 5 In the United States, lifetime prevalence of MDD with a seasonal pattern is estimated at 0.4%, with typical onset in the fall or winter. 6 Persistent depressive disorder, previously dysthymia, is distinguished by the experience of depressed mood and at least 2 other symptoms of depression on more days than not for at least 2 years, not meeting criteria for a full major depressive episode.

Bipolar I disorder is characterized by lifetime presence of at least 1 manic episode, whereas bipolar II disorder is characterized by at least 1 hypomanic episode and at least 1 major depressive episode. Cyclothymia refers to the presence of numerous hypomanic symptoms that do not meet full criteria for a hypomanic episode and depressive symptoms that do not meet criteria for a major depressive episode, occurring for at least half the time for 2 years with no more than 2 months of remission of symptoms.

Other bipolar and depressive disorders include substance-induced/medication-induced and medically induced disorders, which refer to the symptoms previously described that are related specifically to substance-related, medication-related, or medical-related conditions. In addition, specified and unspecified bipolar and depressive disorders refer to other conditions resembling these disorders that do not meet full criteria for those previously described.
COMMON SLEEP DISTURBANCES IN MOOD DISORDERS

Box 1 presents an overview of common sleep disturbances in mood disorders as measured by self-report, polysomnography, and actigraphy.

Self-reported Sleep, Fatigue, and Sleepiness in Mood Disorders

Individuals with mood disorders describe a range of difficulties with sleep continuity and quality as well as related daytime difficulties. Estimates suggest that up to 90% of individuals in a depressive episode report sleep quality complaints.7 About two-thirds of these complaints can be classified as insomnia, whereas about 15% indicate hypersomnia.8,9 Specifically, MDD is related to more frequent reports of difficulty falling asleep, difficulty staying asleep, and waking up too early in the morning, as well as nonrestorative sleep, significantly increased or decreased total sleep time (ie, dependent on insomnia or hypersomnia as the primary concern), lower sleep efficiency, and more frequent disturbing dreams.10 In addition, individuals with MDD report greater daytime sleepiness,11–13 and continued fatigue has been noted as the second most common residual symptom in depression.14

A central distinguishing symptom of manic episodes is the perception of a decreased need for sleep.4 Sleep disturbances continue between mood episodes for bipolar spectrum disorders, including continued difficulty falling and staying asleep, longer time spent in bed, and lower sleep efficiency than in controls.15 Furthermore, interepisode bipolar disorders are associated with significant intraindividual variability in terms of sleep continuity (ie, total sleep time, time to fall asleep, wake time after sleep onset, and sleep efficiency). Bipolar individuals also report greater daytime fatigue and sleepiness. Compared with individuals with primary insomnia, those with interepisode bipolar spectrum disorders tend to show better sleep continuity but report similar levels of daytime sleepiness.16

Beyond information gathered in a clinical interview, questionnaires and daily sleep logs are often helpful in further assessing sleep disturbances so that treatment can be appropriately tailored to the sleep concern. The following are several instruments that can be used easily within clinical practice: the Insomnia Severity Index to assess insomnia,17 the Consensus Sleep Diary to assess daily sleep-wake patterns,18 and the Epworth Sleepiness Scale to assess level of sleepiness.19

Polysomnography Findings in Mood Disorders

Many psychiatric disorders are associated with impacts on sleep architecture as assessed by polysomnography (PSG).20 MDD has received by far the most attention in terms of PSG and related approaches. Disturbances of sleep continuity that are frequently found, based on PSG assessments, include a longer time to fall asleep, increased wake time after falling asleep, and more awakenings early in the morning, leading to lower overall sleep time and sleep efficiency.20,21 Furthermore, patients in a depressive episode show a decreased amount and percentage of stage 3 sleep, with slow wave sleep (SWS) loss most evident during the first non–rapid eye movement (NREM) period but also reduced delta power and slow wave counts throughout the night.21 The distribution of SWS during the night differs among depressed patients, with a lower amount of SWS in the first NREM period versus the second.22 Decreased rapid eye movement (REM) latency is the most robust finding in depression,20 but other REM abnormalities include a prolonged first REM sleep period and increased REM density. REM sleep has been shown to be important for affect regulation.23–25 These findings have largely been replicated in persistent depressive disorder (previously dysthymia), but not with the same severity.26,27
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\(^a\) Bipolar and related disorders only.
The findings discussed earlier have been further supported by advanced sleep analysis using electroencephalogram (EEG) methods, including power spectral analysis and high-density EEG. Automated analysis of SWS indicates a lower ratio of delta sleep (ie, deep sleep) in the first NREM period compared with the second NREM period for depressed patients. This association may be informative regarding prediction of treatment response, because depressed patients with higher delta sleep ratios have been reported to respond better to treatment and those with lower delta sleep ratios were more likely to have recurrent episodes. Studies have also suggested that SWS abnormalities may be affected by the sex, with men tending to show lower slow wave power and slower dissipation of slow wave activity during the night. Studies using high-density EEG during sleep have identified that depressed women showed increased slow wave activity in prefrontal regions.

Notably, REM sleep differences may precede the development of a depressive episode and are often found in first-degree relatives of those who have depression, suggesting a potential biological marker of the disorder. Furthermore, REM sleep and SWS abnormalities can persist during remission from a depressive episode and predict relapse and poor treatment outcome.

Although not as extensively studied, PSG findings in manic episodes seem to be similar to those of a major depressive episode and include severe sleep continuity disturbances, reduced stage 3 sleep, short latency to REM sleep, and increased numbers of rapid eye movements. Interepisode bipolar spectrum disorders have been associated with a significantly higher percentage of stage 1 sleep than healthy controls, but no other differences in terms of sleep continuity, SWS, non-REM sleep, or REM sleep. A study of children with bipolar disorder found lower sleep efficiency, total sleep time, percentage of sleep spent in REM sleep, and percentage of stage 3 sleep compared with healthy controls. Thus, even between episodes of mania and depression, adults and children with bipolar spectrum disorders continue to show some distinctions in PSG-measured sleep compared with healthy controls. Although sleep studies are not diagnostic of mood disorders, the presence of sleep abnormalities such as short REM sleep latency or early morning awakening should trigger consideration for possible mood disorder.

Rest-Activity Disturbances in Mood Disorders

A host of biological processes occur within living organisms in circadian cycles over an approximately 24-hour period. Circadian rhythms are orchestrated endogenously by the central clock in the suprachiasmatic nucleus (SCN) within the hypothalamus and are also behaviorally based in that they are sensitive to external input such as light exposure, which sends signals directly from the eyes to the SCN. Mood-disordered patients show evidence of circadian rhythm disruption, including patterns of abnormal melatonin secretion in both depressed and bipolar patients.

An alternative marker of circadian rhythm dysregulation is the diurnal pattern of rest and activity as measured by wrist-worn actigraphy, which uses a highly sensitive accelerometer to objectively quantify activity. Several measures can be derived from raw activity data, including measures more directly related to activity (eg, average activity counts, variability in rest-activity patterns) as well as average sleep statistics derived from algorithms of rest and activity patterns to approximate sleep and wake. Thus, application of this measure to mood disorder populations may be clinically
useful given that activity and sleep dysregulation are often a crucial part of mood disorders.

In depression, one systematic review identified 19 articles using actigraphy in depressive samples.42 The main findings of this review were that (1) affected patients had significantly lower mean daytime activity counts than controls; (2) daytime activity counts significantly increased with depression treatment; and (3) nighttime activity significantly decreased with depression treatment. Few studies reported actigraphic sleep statistics or variability in rest-activity patterns, so no conclusive statements could be made on these measures.

In bipolar disorder, a recent systematic review of 9 studies and another of 21 studies of patients with remitted bipolar disorder showed that affected patients had significantly longer sleep onset latencies, longer sleep durations, and greater wake time after sleep onset than controls.15,43 One review found affected patients to have less efficient sleep than controls,43 whereas the other did not.15 Ng and colleagues15 found that affected patients had significantly greater variability in total sleep time, sleep onset latency, and wake time after sleep onset (across 3 studies), and lower activity counts (across 4 studies) than controls.

Similarly, there has been a body of work examining social zeitgebers (ie, social cues within the environment related to rest-activity rhythms) through the use of the Social Rhythm Metric.44 A shortened version, the Social Rhythm Metric II, 5-Item Version (SRM-II-545), monitors the timing of 5 daily activities strongly related to outcome in previous studies (ie, out of bed, first contact with another person, start of work/volunteering/school, dinner, and to bed). Studies examining rest-activity rhythmicity in patients with rapid cycling bipolar disorder as well as those with remitted bipolar disorder found that affected patients have significantly fewer rhythmic daily routines than healthy controls.46,47 In addition, one study found that a collection of morning activities were more phase delayed in affected patients than in controls and more likely to occur within affected patients during depressive than hypomanic or euthymic episodes.46

Collectively, these findings underscore the importance of assessing rest-activity patterns when treating individuals with mood disorders. Moreover, although collection of biomarkers and actigraphy are not currently practical in most clinical settings, an understanding of rest-activity patterns can be gathered through the patient and family interviewing process or through sleep logs or assessments such as the SRM-II-5 so that treatment targets can be better defined.

SLEEP DISTURBANCE AS A RISK FACTOR AND INTEREPISODE PERSISTENCE OF SLEEP DISTURBANCE

Historically within psychiatry, sleep-wake disturbances, including insomnia, hypersomnia, and rest-activity dysregulation, have been considered secondary to the mood disorder. That is, as the mood disorder improved, sleep disturbances would improve and, if depression worsened, sleep disturbance would do so as well. However, there is a large body of epidemiologic data that instead supports the contention that sleep disturbance can be independent of, and have a bidirectional relationship with, psychiatric concerns (eg, the comorbid model of insomnia). More specifically, one meta-analysis of 18 epidemiologic studies found that patients with insomnia symptoms and without depression at baseline were 2.6 more times likely to develop future depression than those without insomnia symptoms at baseline.48 In addition to self-report data, there is also evidence that objective abnormalities in sleep latency,
continuity, and duration, as assessed by polysomnography, also predicted future depression onset.49

Hypersomnia has been less studied as a risk factor for future depression. A 4-year prospective, longitudinal study within older adults found excessive daytime sleepiness to be an independent risk factor for subsequent depressive symptoms,50 whereas another prospective, longitudinal study following participants from ages 20 to 40 years found that excessive daytime sleepiness did not predict future depression.51 However, in the latter study, sleepiness correlated with insomnia symptoms, which were predictive of depression.51 Importantly, a recent meta-analysis showed that patients who are depressed with sleep disturbance were 3.1 times more likely to have suicidal behaviors than those who are depressed without sleep disturbance.52 Thus, not only is insomnia a risk factor for onset of depression, and hypersomnia potentially a similar risk factor in some populations, sleep disturbance is also linked with increased likelihood of suicidality.

Rest-activity patterns have also been investigated as a risk factor for future onset of affective episodes in patients with bipolar disorder. One prospective longitudinal study found that less social rhythm regularity predicted onset of both depressive and hypomanic/manic episodes in those with cyclothymia and bipolar II disorder.53 Thus, sleep-wake disturbance in a variety of forms may precede the onset of mood disturbance and could potentially contribute to the onset of a first lifetime mood disturbance. This finding points to the importance of treating sleep issues in individuals with no history of mood disorder because continued sleep disturbance may contribute to future onset of mood disorder.

Furthermore, in individuals with sleep disturbance in the context of a mood disorder, sleep disturbance can often persist even when the mood disorder is considered remitted. For example, one study from the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) trial showed that sleep disturbance occurred as the most common residual symptom with approximately 72% of remitted patients treated with citalopram complaining of sleep issues.54 Similarly, a 3-year prospective study of 267 depressed primary care patients found that sleep problems were present for 85% to 94% of the time during a depressive episode but also persisted for 39% to 44% of the time when depression was in remission.55 In addition, many studies examining subjects with remitted bipolar disorder find that sleep and rest-activity disturbance continues and actigraphic measures of sleep and rest-activity patterns as well as self-reported sleep quality, insomnia severity, and daytime sleepiness differentiate affected patients from controls.15 Thus, in psychiatric practice, these findings underscore that treating both sleep and mood issues as residual sleep disturbance can lead to relapse of the mood disorder.

MECHANISMS FOR SLEEP CHANGES IN MOOD DISORDERS

Several potential mechanisms have been proposed to explain the association of sleep disturbances with mood disorders. Early theories primarily attempted to account for the REM sleep abnormalities that seemed to be most characteristic of depression.

One of the first theories was related to the neurotransmitter imbalance hypothesis for depression, initially proposed by Janowsky and colleagues56 in 1972. They suggested that depression was related to a relative increase in cholinergic activity and decrease in monoaminergic activity in the brain. At about the same time, Hobson and colleagues57 proposed the reciprocal interaction model of NREM/REM sleep cycling; increased brainstem cholinergic activity was associated with turning on REM sleep episodes, whereas increased brainstem monoaminergic activity suppressed the
pontine REM-on neurons. The REM sleep abnormalities often seen in depressed patients, including reduced REM latency and increased REM density and REM sleep amounts, could therefore be explained by increased cholinergic activity and/or decreased monoaminergic activity. Increased cholinergic activity could also account for suppression of slow wave activity.\textsuperscript{58} Most, but not all, antidepressants tend to increase monoaminergic activity and suppress REM sleep, and studies have shown that the ability of a medication to suppress REM sleep may be associated with eventual antidepressant effect.\textsuperscript{59}

Alternatively, Papousek’s\textsuperscript{60} description of the early appearance of REM sleep in depressives was related to a phase advance of the circadian rhythm. REM sleep propensity is tightly linked to the circadian rhythm, and thus a phase advance of the endogenous circadian rhythm could account for reduced latency to REM sleep as well as early morning awakening. However, studies have suggested that mood-disordered patients, including those with major depression as well as bipolar disorder, may show delayed as well as advanced circadian rhythms and even disruptions of circadian rhythms can exacerbate depression. More recent work has shown association of circadian clock gene variants and mood disorders in some but not all studies, but the circadian system could affect mood regulation indirectly through effects on neurotransmitter and neuroendocrine systems\textsuperscript{61} (additional coverage of this topic is provided elsewhere in this issue). Furthermore, treatments designed to entrain circadian rhythms, such as light therapy and interpersonal social rhythm therapy, have been effective in treating mood disorders.

Borbély\textsuperscript{62} described the 2-process model of sleep regulation in 1982, which remains widely accepted today. Sleep depends on the homeostatic sleep drive (process S) that builds up during wakefulness and the circadian sleep propensity (process C). He then suggested that, in depression, there is a deficiency in process S that explains not only the earlier appearance of REM sleep but also the deficiencies in SWS and total sleep amounts that are often present in depression.\textsuperscript{27} Although SWS deficits now seem to be less consistent in depression, there is still some evidence for abnormalities in the homeostatic function of sleep.\textsuperscript{29,63}

Depression is also associated with overactivity of the hypothalamic-pituitary-adrenal axis, which may account for depressive symptoms as well as sleep disturbance.\textsuperscript{64} Increases in both corticotropin-releasing hormone (CRH) level and glucocorticoid levels can lead to decreased slow wave activity, reduced REM sleep latency and increased REM density.\textsuperscript{59} CRH antagonists have been shown to increase SWS and decrease REM density, and CRH antagonists are being developed as potential treatments for a variety of mood-related and anxiety-related disorders.\textsuperscript{65}

More recent studies have focused on the role of sleep-related neuroplasticity in depression. Genes related to plasticity show increased expression during waking, and those related to synaptic downscaling are preferentially expressed during sleep, particularly during SWS\textsuperscript{66}; the renormalization of synaptic strength and restoration of cellular homeostasis during sleep are necessary for optimal brain function (discussed elsewhere in this issue). Mechanisms involved in brain plasticity are similar to those thought to mediate most of the core features in mood disorders.\textsuperscript{67} Antidepressants seem to exert their clinical effects in part by inducing neuroplastic changes, which generally take several weeks to occur.\textsuperscript{68} More rapidly acting treatments for depression, including sleep deprivation and ketamine, likely act by increasing synaptic strength and synaptic plasticity more immediately,\textsuperscript{59} and the increase in slow wave activity following ketamine infusion or sleep deprivation have been correlated with an antidepressant response.\textsuperscript{63,70,71}
SLEEP DISORDERS IN PATIENTS WITH MOOD DISORDERS

Patients with mood disorders may also have increased rates of other primary sleep disorders and vice versa, so it should not be assumed that all sleep complaints in psychiatric patients are related to psychiatric illness. Patients with depression have an increased prevalence of obstructive sleep apnea (OSA), and individuals with apnea have higher rates of depression. Moreover, OSA is a risk factor for developing depression, and in those with apnea, depression contributes to the severity of daytime fatigue. In contrast, treatment of OSA may lead to improvement in depression. There is significant overlap of symptoms between depression and apnea, particularly in the vegetative symptoms of fatigue, cognitive complaints, and lack of motivation, which can make diagnosis of these comorbid conditions challenging.

Epidemiologic studies have found an increased rate of depression in patients with restless legs syndrome. Although some antidepressant medications can exacerbate restless legs, the diagnosis of restless legs often precedes the diagnosis of the psychiatric disorder, suggesting that the association is not primarily mediated by antidepressant therapy.

As described previously, circadian rhythm disturbances of sleep and waking are also more prevalent in patients with mood disorders. Delayed sleep phase has been reported in unipolar and particularly bipolar depression, most prominently in adolescents and young adults. Treatments designed to correct circadian misalignment have been shown to improve the course of bipolar disorder (discussed elsewhere in this issue).

Narcoleptics have significantly increased rates of major depression (adjusted odds ratio [AOR] = 2.67) and bipolar disorder (AOR = 4.56), and increased depressive symptoms have been reported in idiopathic hypersomnia. Although a significant minority of patients with depression report hypersomnia, and narcolepsy is a rare disorder, depressed patients with pathologic sleepiness should be screened for central nervous system hypersomnia disorders such as narcolepsy.

Confusional arousal, a parasomnia that involves confusional behavior following an awakening, often accompanied by at least partial amnesia, were found to be associated with a variety of psychiatric disorders, but particularly mood and anxiety disorders, as well as use of antidepressant medications. However, other SWS parasomnias, such as sleepwalking, are not necessarily associated with increased rates of psychiatric disorders. A broader review of primary sleep disorders in psychiatric populations is provided elsewhere in this issue.

EFFECTS OF PSYCHIATRIC DRUGS ON SLEEP

Most medications used in the treatment of depression can have effects on sleep (reviewed in Ref. 81). Sedating antidepressants, including trazodone, mirtazapine, and tricyclic antidepressants (TCAs) such as amitriptyline are frequently used as sleep-promoting agents in doses that are subtherapeutic for depression. Only doxepin has been approved by the US Food and Drug Administration as a hypnotic, also in a dose that is considerably less than is needed for an antidepressant effect. Mood stabilizers such as lithium carbonate and anticonvulsants, as well as antipsychotic agents used in treating bipolar disorder or in treatment-resistant depression, can also cause sedation. In patients with mood disorders and significant insomnia, these agents may be useful to manage both sleep and mood symptoms.

Many of the newer antidepressants, including selective serotonin reuptake inhibitors (SSRIs), and serotonin-norepinephrine reuptake inhibitors (SNRIs), as well as the older monoamine oxidase inhibitors (MAOIs), tend to cause insomnia. Although their
activating effects may be helpful in depressed patients with fatigue or hypersomnia, their use in patients with depression and insomnia may worsen sleep disturbance, leading to the need for addition of hypnotics or sedating antidepressants specifically for sleep.

Antidepressants and mood stabilizers can also lead to changes in sleep architecture. Many antidepressants lead to REM sleep suppression, including TCAs, SSRIs, SNRIs, and MAOIs; they can produce REM sleep rebound and insomnia if discontinued abruptly. In contrast, bupropion does not typically suppress REM sleep and may even lead to increases in REM sleep amounts.

Increases in SWS have been reported with trazodone, lithium carbonate, and some antipsychotic drugs.

Primary sleep disorders can also be precipitated or exacerbated by psychiatric medications. Drugs that increase arousal threshold or produce weight gain, as do many antidepressants, antipsychotics, and mood stabilizers, can exacerbate the tendency for OSA. Sleep-related movement disorders such as restless legs and periodic limb movements have been associated with most antidepressants (eg, SSRIs, SNRIs, TCAs, mirtazapine) as well as antipsychotics. REM sleep behavior disorder, as well as increased REM sleep without atonia, has also been reported in patients using REM sleep-suppressing antidepressants.85 SSRIs have also been shown to lead to increased eye movements during NREM sleep, sometime referred to as Prozac eyes; this effect can persist even after discontinuation of medication.

**Effects of Treating Sleep on Mood Disorders**

Insomnia may be treated with medication and/or cognitive behavior therapy (CBT) for insomnia. CBT is an evidence-based treatment of insomnia that has been shown to be effective in those with insomnia and comorbid psychiatric disorders. CBT for insomnia typically consists of a multicomponent approach including stimulus control, sleep restriction therapy, sleep hygiene practices, and cognitive therapy (for further details see Ref. 89). Two smaller randomized controlled trials have examined the concurrent treatment of insomnia (ie, randomization to CBT for insomnia or a behavioral control group) and depression (ie, all participants receiving standard antidepressant medication). Both of these studies showed not only greater improvement in insomnia for the group receiving CBT for insomnia but also improvement in depressive symptoms compared with those receiving only antidepressant treatment with a behavioral control group. In addition, in an uncontrolled clinical sample of veterans with insomnia receiving CBT for insomnia, results showed that improvement in insomnia was related to a significant decrease in suicidal ideation, even when controlling for change in depressive symptom severity more broadly over the course of treatment.

Several studies examining insomnia treatment with medications such as eszopiclone, zolpidem, and lorazepam all found a reduction in insomnia symptoms. Furthermore, the study using eszopiclone in combination with antidepressant treatment showed additional benefit in depressive symptoms compared with subjects receiving antidepressant treatment and a sleep placebo. Thus, specific insomnia treatment is beneficial for insomnia in the context of depression. Moreover, CBT for insomnia seems to be a promising adjunctive therapy in patients with unipolar depression to further depressive treatment response.

Related to the association of mood disorders with circadian rhythm abnormalities, behavioral chronotherapeutic interventions have also been shown to help improve both sleep and the underlying mood disorder; these therapies include sleep deprivation therapy, bright light therapy, and social rhythm therapy. A variety of sleep manipulations, including total and partial sleep deprivation, have been shown to have rapid-onset antidepressant effects, with response rates similar to those seen with antidepressant drug therapy (ie, average response rate of about 60% across diagnostic subgroups; for further
Several patient characteristics have been identified as predictive of better response, including a more pronounced diurnal pattern of mood and bipolar disorder. Although effective initially, one drawback of sleep deprivation therapies is that the initial gains are typically quickly lost after an episode of recovery sleep. However, studies have shown a better ability to sustain the initial mood improvements when combining sleep deprivation therapy with other forms of treatment, including medication and light therapy. However, sleep deprivation therapies have not come into widespread clinical use, likely because of the difficulty in administering them. Furthermore, these findings should not lead clinicians to conclude that the insufficient sleep is generally helpful for patients with depression. Sleep deprivation or restriction therapies should be used with caution in patients with bipolar disorder because they can trigger mania. In patients with severe or treatment-nonresponsive depression, sleep deprivation or the sleep restriction therapy component of CBT for insomnia may be helpful for both sleep and mood.

More common in clinical practice is the use of bright light therapy. Light therapy entails administration of full-spectrum white light at 5000 to 10,000 lux in the morning on awakening. A meta-analysis of randomized controlled trials examining light therapy in the treatment of mood disorders showed that bright light treatment (minimum of 3000 lux daily) led to a significant reduction in depressive symptoms in both individuals with seasonal affective disorder (effect size = 0.85) and nonseasonal depression (effect size = 0.53). More recently the retinal melanopsin receptor has been identified as the mediator of the circadian, alerting, and mood effects of light, with greatest sensitivity to light with a wavelength of 460 to 480 nm (blue light). As a result, new light therapy devices often enrich for light in this wavelength.

Social rhythm therapy (SRT) has shown strong efficacy in patients with bipolar disorder when combined with Klerman and colleagues’ interpersonal psychotherapy to form interpersonal and social rhythm therapy (IPSRT). The SRT component of this treatment entails helping individuals to develop more structured schedules across the day, often with key targets, including regular times each day for getting out of bed; having first contact with another person; starting work, school, or volunteer work; having dinner; and going to bed. A 2-year outcome study from a large randomized controlled trial in bipolar patients showed that participants assigned to IPSRT (vs intensive clinical management) had higher regularity of social rhythms by the end of acute treatment and then were recurrence free for longer during the maintenance period. Similarly, a recent randomized controlled study incorporated SRT into CBT for insomnia for patients with interepisodic bipolar I disorder and insomnia. Patients randomized to CBT for insomnia/SRT had improved insomnia compared with those randomized to psychoeducation. Moreover, in the 6-month follow-up period, subjects in the active sleep treatment condition had fewer days in an affective episode and lower hypomania/mania recurrence rates compared with the psychoeducation group.

Thus, a variety of sleep therapeutic options have shown efficacy in treating sleep issues in the context of mood disorders. The findings that many of these therapies lead not only to improvement in sleep and rhythmicity but also to improvement in mood underscores the need to consider adding specific sleep-related treatment when approaching treatment of patients with mood disorders.

SUMMARY

Both self-reported and objective sleep disturbances, including insomnia, hypersomnia, changes in sleep architecture, and rest-activity dysregulation, are common
in people with mood disorders. In addition, this population often is at greater risk for other primary sleep disorders, such as OSA, restless legs syndrome, and circadian rhythm disorders, and although some psychiatric medications may be beneficial for sleep, others may disrupt sleep. Attending to sleep disturbances in this population is of utmost importance given that sleep disturbances are a risk factor for onset of mood disorders, they often continue as a residual symptom in patients with remitted mood disorders, and they can lead to exacerbation (including greater risk of suicidality) and relapse of mood disorders. However, several effective treatments are available for sleep disturbances comorbid with mood disorders and show promise for treating not only sleep but also improving mood outcomes.

REFERENCES


