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Brief report

Prevalence and clinical correlates of co-occurring insomnia and hypersomnia symptoms in depression

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ABSTRACT

Background: The aim was to examine the prevalence and consequences of co-occurring insomnia and hypersomnia symptoms in depressed adults drawn from a representative sample of the U.S. population.
Method: Data from 687 National Comorbidity Survey Replication (NCS-R) respondents meeting criteria for a major depressive episode (MDE) in the past year were included. Respondents completed clinical interviews that assessed 12-month *DSM-IV* disorders, impairment, mental health treatment, and depressive symptom severity. Outcomes were compared between respondents who experienced insomnia symptoms-only ($N=404$), hypersomnia symptoms-only ($N=44$), both insomnia and hypersomnia symptoms ($N=184$) and no sleep problems ($N=55$) during an MDE.
Results: Insomnia and hypersomnia symptoms co-occurred in 27.7% of respondents with past-year MDEs, most frequently in bipolar spectrum disorders and major depressive disorder with dysthymia. Similar to the insomnia-only group, respondents with co-occurring sleep disturbances had more severe depression, and higher rates of past-year impulse control disorders and suicide planning. Similar to the hypersomnia-only group, respondents with co-occurring sleep disturbances had higher rates of past-year drug use disorders and suicide attempts. Compared to the insomnia-only and no sleep problem groups, respondents with both sleep disturbances were more frequently in mental health treatment, seeing a general practitioner, and taking antidepressants.
Limitations: The NCS-R is cross-sectional and did not evaluate sleep disorder diagnoses.
Conclusions: Co-occurring insomnia and hypersomnia symptoms were associated with a more severe MDE. Further research is warranted to more fully understand the joint presentation of insomnia and hypersomnia in depression.

1. Introduction

Sleep disturbances are present in up to 90% of depressed patients, and can profoundly impact course of illness (Tsuno et al., 2005; Kaplan and Harvey, 2009). A broad spectrum of sleep disturbances occur in depression, including symptoms of insomnia (difficulty falling asleep, difficulty staying asleep, early morning awakening) and hypersomnia (Tsuno et al., 2005; Benca, 1996; Armitage, 2007). Research on insomnia and hypersomnia in depression has predominantly focused on these sleep problems as distinct entities (Sunderajan et al., 2010; Ford and Kamerow, 1989). However, growing evidence indicates that insomnia and hypersomnia can co-occur. Psychometric work on sleep complaints in psychiatric disorders found that insomnia and hypersomnia/lassitude factors exhibited a substantial positive correlation (Koffel and Watson, 2009). In general population studies, 6% of adults (Ohayon, 2012) and 8% of young adults (Breslau et al., 1996) experienced comorbid insomnia and hypersomnia. Furthermore, these sleep problems co-occurred in 10% of children with major depressive disorder (MDD; Liu et al., 2007) and 11% of older adults in a depressive episode (Roberts et al., 2000).

Initial studies suggest a detrimental impact of co-occurring insomnia and hypersomnia. Their joint presentation was associated with a longer history of depression, recurrent episodes and greater depression severity in children diagnosed with MDD (Liu et al., 2007), new depression onset in older adults (Roberts et al., 2000), and a greater number of lifetime psychiatric disorders in a general population sample (Breslau et al., 1996). Women were also more likely to experience both sleep disturbances (Breslau et al., 1996). However, definitions of insomnia and hypersomnia

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were not consistent across studies, and differences between mood disorders, functional impairment outcomes, and treatment utilization remain unexplored.

Drawing from National Comorbidity Survey-Replication (NCS-R) respondents, the overarching aim of the present investigation was to examine the prevalence and consequences of co-occurring insomnia and hypersomnia symptoms in depressed adults, using empirically-derived quantitative definitions for both hypersomnia (Kaplan et al., 2011) and insomnia symptoms (Lichstein et al., 2003). Our first aim was to examine the prevalence of four presentations of sleep disturbance (co-occurring insomnia and hypersomnia symptoms, insomnia symptoms-only, hypersomnia symptoms-only, and no sleep problems) during depressive episodes in NCS-R respondents meeting criteria for MDD, MDD with dysthymia, and bipolar spectrum disorders. The second aim was to evaluate whether co-occurring insomnia and hypersomnia symptoms were associated with specific sociodemographic characteristics, more severe clinical features and functional impairment, and mental health treatment utilization.

2. Methods

2.1. Sample

Participants were identified from the National Comorbidity Survey-Replication (NCS-R), a nationally representative community household survey of mental illness conducted in the United States between February 2001 and April 2003 (Kessler et al., 2004). Study procedures have been described elsewhere (Soehner and Harvey, 2012). The 2-part survey included 9282 respondents and had an overall response rate of 70.9% (Kessler et al., 2004). The analyses reported are based on NCS-R respondents meeting *DSM-IV* criteria for a major depressive episode (MDE) in the past year, who had completed Quick Inventory of Depressive Symptoms Self-Report (Rush et al., 2003) items 1–4 ($N=687$).

2.2. Diagnostic assessment

The *WHO-CIDI* (Kessler and Ustun, 2004) interview evaluated past-year *DSM-IV* psychiatric disorders, age of MDE onset, number of MDEs, past-year MDE duration, history of psychiatric hospitalization and suicide attempts, past-year suicidal behavior (ideation, plans, attempts), past-year mental health service utilization, and past-year psychiatric medication usage. Within the subsample meeting MDE criteria ($N=687$), 455 had MDD-only, 109 had MDD with dysthymia, and 123 had a bipolar spectrum disorder (Type 1 $N=37$, Type 2 $N=51$; subthreshold $N=35$). Other past-year *DSM-IV/CIDI* disorders included anxiety disorders, drug and alcohol use disorders, and impulse-control disorders.

2.3. Depression severity, insomnia and hypersomnia

Depression severity was evaluated using the Quick Inventory of Depressive Symptoms-Self-Report (*QIDS-SR*; Rush et al., 2003) focusing on the most severe month of depression in the past year. The *QIDS-SR* assessed sleep complaints, including difficulty falling asleep (item 1), difficulty maintaining sleep (item 2), early morning awakening (item 3) and hypersomnia (item 4). Each item is scored on a scale of 0–3, with higher scores indicating greater severity. *QIDS-SR* items 1–3 and item 4 have been validated as measures of insomnia symptom severity and hypersomnia severity, respectively, showing agreement with a weekly sleep diary (Manber et al., 2005; Kaplan et al., 2011).

To quantify insomnia symptoms, cut-points for *QIDS-SR* items 1–3 were selected based on sleep continuity complaints of >30 min for ≥ 3 days/week (Lichstein et al., 2003). Insomnia symptoms were coded as present if respondents had: difficulty falling asleep (*QIDS-SR* item 1 score ≥ 2), difficulty maintaining sleep (*QIDS-SR* item 2 score$=3$), or early morning awakening (*QIDS-SR* item 3 score ≥ 1). The cut-off for difficulty maintaining sleep is 20 min, rather than 30 min, due to the phrasing of *QIDS-SR* item 2. However, only 3.1% of respondents experiencing insomnia symptoms reported *only* difficulty maintaining sleep. For hypersomnia, a cut-off of ≥ 1 on *QIDS-SR* item 4 (sleeping up to 10+ hours per day) was selected based on previous work (Tam et al., 1997; Kaplan et al., 2011). Among respondents with a past-year MDE ($N=687$), four groups were formed on the basis of insomnia or hypersomnia symptoms: (1) no sleep problems (NSP; $N=55$), (2) hypersomnia symptoms-only (HYP-only; $N=44$), (3) insomnia symptoms-only (INS-only; $N=404$), and (4) both insomnia and hypersomnia symptoms (INS–HYP; $N=184$).

2.4. Impairment

The Sheehan Disability Scales (*SDS*; Leon et al., 1997) assessed MDE-related role impairment, focusing on the most severe month of depression in the past year. Respondents also estimated the number of days in the past 365 when they were "totally unable to work or carry out your normal activities" because of depression.

2.5. Data analysis

Analyses were conducted with sample weighting from NCS-R Part I using Stata 12.0 (Stata Corporation, College Station, TX, 2011). Because the sample design used weighting and clustering, all parameters were estimated by using the Taylor series linearization method. Further information on NCS-R sample weighting procedures can be found elsewhere (Kessler et al., 2004). Analyses aimed to identify differences between the four sleep disturbance groups (NSP, INS-only, HYP-only, INS–HYP). Rao–Scott chi-square tests and logistic regressions were used to detect design-corrected between-group differences in categorical outcomes. Multiple linear regressions evaluated differences between groups for continuous outcomes. Regressions controlled for age, sex and education status. Statistical significance was evaluated using a 2-sided design with alpha$=0.05$.

3. Results

3.1. Prevalence of sleep problems

Among respondents with an MDE in the past year ($N=687$), 7.2% had NSP, 59.1% had INS-only, 5.9% had HYP-only, and 27.7% had INS–HYP. Within the MDD-only group ($N=455$), 8% had NSP, 58.8% had INS-only, 7.5% had HYP-only, and 25.6% had INS–HYP. Similarly, in respondents with MDD and dysthymia ($N=109$), 6.5% had NSP, 57.4% had INS-only, 3.8% had HYP-only and 32.3% had INS–HYP. Finally, in bipolar spectrum disorders ($N=123$), 4.9% had NSP, 62.0% had INS-only, 2.0% had HYP-only, and 31.1% had INS–HYP.

3.2. Features associated with sleep problems

Table 1 describes the demographic characteristics, depression outcomes and functional impairments by sleep disturbance group. Table 2 describes psychiatric comorbidity and mental health treatment for each group.

3.2.1. Sociodemographic characteristics

HYP-only respondents were significantly younger than the other three groups, and INS–HYP respondents were significantly