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Sleep disturbance and obsessive-compulsive symptoms: Results from the national comorbidity survey replication

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ABSTRACT

A small body of developing research has found evidence for sleep disturbance in obsessive-compulsive disorder (OCD) and links between sleep disturbance and obsessive-compulsive symptoms (OCS) in unselected samples. However, the link between sleep disturbance and OCS is yet to be examined in a nationally representative sample. Furthermore, the extent to which the link between sleep disturbance and OCS is accounted for by symptoms of depression remains unclear. To address this gap in the literature, the present study examined the relationship between sleep disturbance and OCS in a nationally representative sample. Participants were assessed in the National Comorbidity Survey Replication (NCS-R; $n = 2073$). Consistent with predictions, results revealed that individuals with sleep disturbance reported increased OCS severity compared to individuals without sleep disturbance. Further, sleep disturbance severity was associated with OCS severity, even when controlling for depression (and other anxiety-related disorders). This study is the first to link sleep disturbance and OCS in a nationally representative sample, and these findings highlight the unique role of sleep disturbance in the experience of OCS. Future research is necessary to delineate specific mechanisms that may account for this relationship.

1. Introduction

Obsessive-compulsive disorder (OCD) is a debilitating disorder characterized by obsessions, or repetitive intrusive, distressing thoughts, and compulsions, or repetitive behaviors performed in order to reduce the distress caused by the obsession (American Psychiatric Association, 2013). While lifetime prevalence estimates indicate that OCD is relatively rare (2.3%), results from a nationally representative sample indicate that approximately 28.2% of the population report experiencing obsessive-compulsive symptoms (OCS) in their lifetime (Ruscio et al., 2010). Due to the debilitating nature of the disorder, research efforts have increasingly focused on delineating processes that may maintain OCD. Although the majority of extant research examining sleep disturbance in anxiety disorders has focused on posttraumatic stress disorder (see Babson and Feldner, 2010 for a review), a small body of research suggests that sleep disturbance may also contribute to obsessive-compulsive disorder (OCD) (Nota et al., 2015; Paterson et al., 2013).

Sleep is a critical psychobiological process that is involved in the maintenance of physical and mental health (Diekelmann and Born, 2010; Goldstein and Walker, 2014; Xie et al., 2013). Similarly, impaired sleep is linked to diverse downstream consequences, including altered neural function (Ma et al., 2015; Yoo et al., 2007), impaired cognitive processes (Drummond et al., 2006; Harrison and Horne, 2000), and dysregulated emotional function (Mauss et al., 2013; Minkel et al., 2012). Similarly, sleep disturbance is comorbid with the majority of psychiatric disorders (Benca et al., 1992), including anxiety disorders (Roth et al., 2006). Indeed, subjective sleep complaints are commonly observed among individuals with an anxiety disorder (Marcks et al., 2009; Ramsawh et al., 2009), and recent research suggests that sleep disturbance predicts the development of an anxiety disorder (Batterham et al., 2012; Neckelman et al., 2007).

Although relatively few studies have objectively measured sleep in those with OCD, extant research indicates that individuals with OCD exhibit multiple disturbances in sleep compared to healthy controls, including decreased total sleep time (Alfano and Kim, 2011; Insel et al., 1982; Rapoport et al., 1981; Voderholzer et al., 2007), increased wake after sleep onset (Alfano and Kim, 2011;

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Insel et al., 1982; Voderholzer et al., 2007), and decreased sleep efficiency (Hohagen et al., 1994; Rapoport et al., 1981; Voderholzer et al., 2007). Similarly, self-reported sleep disturbance has been linked to OCS in clinical and unselected samples. Among children with OCD, subjective sleep problems are associated with OCS severity (Storch et al., 2008), and sleep disturbance is linked to poor OCD treatment outcome (Ivarsson and Skarphedinsson, 2015). Likewise, among unselected samples, increased OCS are linked to delayed sleep timing (Nota and Coles, 2015) and subjective insomnia severity (Raines et al., 2015). Further, one recent study found that subjective insomnia severity is uniquely linked to obsessions, and this relationship is not accounted for by depression (Timpano et al., 2014).

The available evidence suggests that the presence of sleep disturbance may compound the severity and impairment of OCD (Ivarsson and Skarphedinsson, 2015; Robinson et al., 1998). However, no study to date has assessed this relationship in a nationally representative sample. Such a study is critical in order to assess whether the link between sleep disturbance and OCS is limited to specific subgroups (i.e., undergraduate students; individuals with OCD) or whether this relationship is present in the general population. Evidence for links between sleep disturbance and OCS in the general population may point to a unique role of sleep disturbance in the development of OCS in clinical and subclinical individuals. Such a role may provide evidence for the utility of incorporating sleep-related interventions into a more comprehensive approach to the treatment of OCD. The current study addresses this limitation in the extant research by assessing the link between subjective sleep disturbance and OCS in the National Comorbidity Survey Replication (NCS-R). It was hypothesized that individuals with sleep disturbance would report increased OCS compared to individuals without sleep disturbance. A careful review of the literature suggests that many of the sleep disturbances associated with OCS are also characteristic of depression. Although some research suggests that the link between subjective sleep disturbance and symptoms of OCD is not accounted for by depression (Timpano et al., 2014), others have found that depression may explain this relationship (Diaz-Roman et al., 2015). Given the inconsistent findings in the literature, the present study also examined the extent to which sleep disturbance severity is associated with OCS severity when controlling for depression.

2. Materials and methods

2.1. Sample

The NCS-R is a nationally representative survey of English-speaking adults (18 or older) residing in the United States who participated in in-person interviews in their homes between February 2001 and April 2003 (see Kessler et al., 2004 for a detailed description of survey procedure). All survey participants completed Part I of the survey, which assessed for core psychological disorders (n = 9282), and a subset of participants completed Part II, which assessed for additional disorders and clinical correlates, including insomnia (n = 5692). Of the Part II participants, a random subsample (n = 2073) were administered the module assessing OCD. Of the participants who were administered the OCD module, 2 refused to respond, which yielded a final sample of $n = 2071$ participants included in analysis. Informed consent was obtained from all participants.

The sample was 50.2% female with a mean age of 45.22 years (SE = .57) ranging from 18 to 94 years. The racial composition of the sample was as follows: Black (12.5%), Hispanic (11.4%), White (72.1%), Other (4.0%). The majority of the participants were married (56.2%), while 19.9% were separated, widowed, or divorced, and 23.8% were never married. The years of education obtained by the sample were as follows: 0–11 years (17.1%), 12 years (32.3%), 13–15 years (26.2%), more than 16 years (24.4%).

2.2. Measures

2.2.1. OCS

OCD was assessed with the World Health Organization Composite International Diagnostic Interview 3.0 (CIDI 3.0; Kessler and Ustun, 2004). Due to a skip logic error discovered following survey administration (Ruscio et al., 2010), only the first 9 items of the OCD module were examined in the present study. Participants completed 9 yes/no items regarding 9 subtypes of OCD (contamination, checking, ordering, hoarding, sexual/religious, moral, harming, illness, other) in response to the following prompt: “Did you ever have a period in your life lasting two weeks or longer when most days you experienced any of the following unpleasant thoughts, images, or impulses, or repeated behaviors that you felt compelled to do?” An OCS severity score was created by summing the responses on these 9 items.

2.2.2. Sleep disturbance

Sleep disturbance was assessed in the Chronic Conditions section of the CIDI 3.0 with 4 yes/no items each measuring problems with sleep initiation, sleep maintenance, early morning awakening, and daytime sleepiness in response to the following prompt: “Did you have a period lasting two weeks or longer in the past 12 months when you had any of the following problems with your sleep?” Participants endorsing one or more sleep problem were coded as presenting with sleep disturbance, while participants endorsing no sleep problem were coded as having no sleep disturbance. Further, a sleep disturbance severity score (0–4) was created by summing the responses on these 4 items.

2.2.3. Depression

Depression was assessed with the CIDI 3.0 (Kessler and Ustun, 2004). In the present study, depression was defined as experiencing a major depressive episode in the past 12 months.

2.3. Data analytic strategy

All analyses were conducted in SPSS 20.0 using the Part II sample weighting. First, an independent samples t-test was conducted to assess whether individuals who report sleep disturbance report increased OCS severity compared to individuals who do not report sleep disturbance. Cohen's *d* was calculated using G*Power 3.1 (Faul et al., 2009). Second, an analysis of covariance (ANCOVA) was conducted to assess whether sleep disturbance severity is associated with OCS severity when controlling for depression. Depression was included in the model because depression is often comorbid with OCD (Ruscio et al., 2010) and sleep disturbance (Soehner et al., 2014). Cohen's *f* was calculated using G*Power 3.1 (Faul et al., 2009).

3. Results

3.1. Associations between study variables and frequency of relevant disorders

As shown in Table 1, sleep disturbance severity and a major depressive episode in the past 12 months were significantly associated with presence of any lifetime OCS, while presence of sleep disturbance was not significantly associated with presence of lifetime OCS. Further, 42.5% of participants reported the presence of sleep disturbance in the past 12 months, 28.2% reported having