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A population study of the association between sleep disturbance and suicidal behaviour in people with mental illness

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ABSTRACT

Limited representative research has considered the relationship between sleep disturbance and suicidal behaviour among people with mental illness. We investigated the relationship between sleep disturbance and suicidal behaviour across Part II interview of the National Comorbidity Survey Replication (NCSR). The associations between sleep disturbance and suicidal behaviour (thoughts, plans and attempts) were investigated using logistic and multinomial logistic regressions and stratified across six mental disorder groups (depression, anxiety, substance use disorders (SUD), eating disorders (ED), bipolar disorders (BD) and early life disorders). From 5701 participants (mean age 43.4 years 58% women), people with any mental disorder experiencing sleep disturbance were at increased odds of suicidal thoughts (odds ratio (OR): 2.5; 95% CI: 1.7, 3.6) and suicidal plans and attempts (OR: 5.7; 95% CI: 2.7, 11.9) adjusting for age, sex and income. People with BD (OR: 8.9; 95 CI: 2.1, 38.1), early life disorders (OR 6.98, 95% ci 2.48, 19.67), depression (OR 1.88, 95% CI 1.14, 3.11), anxiety (OR 1.90, 95% CI 1.28, 2.85) and SUD (2.60, 95% CI 1.23, 5.49) but not ED, were at increased odds of suicidal thoughts in the presence of sleep disturbance. Adjusting for anti-depressant intake attenuated the effect sizes by up to 20% but the associations remained significant. In conclusion, sleep disturbance is a potential risk factor for suicidal behaviours in people with mental illness. Monitoring and management of sleep disturbance in clinical practice might be an important strategy to mitigate suicidal behaviours in people with mental illness.

1. Introduction

Suicide is a pervasive, but preventable, cause of death, affecting both sexes, all races, people across the socioeconomic status spectrum and throughout the lifespan (Nock et al., 2008). Globally, there are over a million deaths by suicide each year (Krug et al., 2002; Wilcox and Wyman, 2016). Suicide remains a leading cause of death among people below the age of 40 (Mcloughlin et al., 2015). The negative implications of suicide extend beyond the individual to families, communities, caregivers and health care providers. Consequently, the prevention of suicidal behaviour is a global priority.

In the US, suicide is the 10th leading cause of death with approximately 30,000 deaths annually (Goldsmith et al., 2002; Murphy et al.). These statistics do not include rates of suicidal ideation and attempts, which greatly outnumber completed suicides; between 10 and 25 nonlethal suicide attempts are made for each lethal suicide attempt (Maris, 2002). There is evidence of a clear escalation from suicidal ideation, plans and attempts, with a recent study across 17 countries demonstrating that 60% of people transition from ideation to attempts within one year (Nock et al., 2008). Thus, the identification and management of risk factors at

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an early stage is key and the prevention of the spectrum of suicidal behaviours is essential.

Recently, interest has begun in the relationship between poor sleep and mental illness (Steinan et al., 2015; Cho et al., 2016; Sheaves et al., 2016), the onset of pain (Bonvanie et al., 2016) and burnout (Grossi et al., 2015) all of which are also associated with suicidal behaviours (Wilcox and Wyman, 2016). Surprisingly, despite the established bidirectional relationship between sleep disturbances and depression (Lustberg and Reynolds, 2000), and mental illness and suicide (Harris and Barraclough, 1997), a paucity of research has considered the relationship between sleep difficulties and suicidal behaviours among people with recognised mental illnesses. Whilst a previous study (Wojnar et al., 2009) found that the relationship between sleep disturbance and suicide remained robust after the adjustment for mental illness diagnosis, there is growing interest in the specific risk of sleep and suicide among people with established mental illnesses. A previous meta-analysis found across 13 studies that sleep disturbance was associated with a range of suicidal behaviours in people with depression/depressive disorder (Malik et al., 2014). However, very few of the included studies were drawn from representative samples (i.e. sample sizes >2000) and the authors found a paucity of studies considering this relationship in other mental illnesses. For instance, the relationship between sleep disturbance and suicide in people with schizophrenia, affective disorder and panic disorder are limited to evidence drawn from single studies, therefore, clearly precluding any definitive conclusions. Very little research appears to have considered the relationship between sleep disturbance and suicidal behaviour among people with other mental illness classifications such as bipolar disorder, substance use disorder and eating disorders.

Given that a) mental illness is often a central risk factor for suicidal behaviour (Haw and Hawton, 2015), b) sleep disturbances are common among people with mental illness (Ohayon, 1997) and c) sleep disturbances are an established risk factor for suicide among people without mental (Bernert and Nadorff, 2015), it is important to consider if sleep disturbances are associated with suicidal behaviour in people with mental illness. Understanding if sleep disturbance is a risk factor for suicidal ideation could be important for clinical practice, research and policy.

The aim of this study is to investigate the associations between suicidal behaviour and sleep disturbance in people with and without mental disorders across a representative cohort of US adults. In particular, we sought to investigate if the risk of suicidal behaviour differed among those with different mental illness classifications.

2. Methods

2.1. Study population

The analysis was based on the Part II subsample of the National Comorbidity Survey Replication (NCSR). The NCSR is a part of the Collaborative Psychiatric Epidemiological Surveys (CPES), together with the National the National Latino and Asian-American Survey (NLAAS) and the National Study of American Life (NSAL). These three surveys were carried out by the professional interviewers using the same diagnostic instrument during the same time period. The primary objective of the CPES was to collect data about the prevalence of mental disorders, their associated impairments and treatment patterns from representative samples of majority and minority adult populations in the US (http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/20240).

The NCSR Part II interview was administered to participants reporting with a lifetime mental disorder in the Part I survey and a probability subsample of other participants without a lifetime mental disorder. More detailed information on sampling methods and ethical approval including the committee number is detailed elsewhere (Kessler et al., 2004). This study included 5701 people who answered questions related to sleep disturbance in the past 12 months.

2.2. Mental illness classification

All mental illnesses were based on the DSM-IV diagnoses in the CPES. Subsequently, participants were divided into six groups of mental disorders based on the last 12 months including depression, anxiety, substance related disorders (alcohol, drug and nicotine), early life disorders (usually first diagnosed in infancy, childhood or adolescence), eating disorders and bipolar disorders.

2.3. Suicidal behaviour

Suicidal behaviour in the past 12 months was defined using self-reported information on suicidal thoughts, plan and attempt. Since suicidal thoughts were more frequent than suicidal plans or attempts, a binary variable was generated to identify those with or without suicidal thoughts in the past 12 months. In addition to suicidal thoughts, a measure of suicidal levels further considered those reporting suicidal plan or attempt and categorised the study population into three groups: no suicidal in the past 12 months, suicidal thoughts only, suicidal plan or attempt. There was a small number of people who had suicidal plan or attempt but no suicidal thoughts (N = 16).

2.4. Sleep disturbance

The measures of sleep disturbance included three symptoms in the past 12 months: taking 2 or more hours to fall asleep for more than 2 weeks ('Did you have a period lasting two weeks or longer in the past 12 months when nearly every night it took you two hours or longer before you could fall asleep?'), taking 1 or more hours to get back to sleep for more than 2 weeks ('Did you have a period lasting two weeks or longer in the past 12 months when you woke up nearly every night and took an hour or more to get back to sleep?') and feeling sleepy during the day for more than 2 weeks ('Did you have a period lasting two weeks or longer in the past 12 months when you had problems feeling sleepy during the day?') woke up nearly every morning at least two hours). Those who reported any of these symptoms were considered to have sleep disturbance.

2.5. Covariates

Socio-demographical variables including age, sex and income to need ratio was considered to be potential confounding factors for the associations between suicidal behaviour and sleep disturbance. The measure of income to need ratio in CPES was based on the US Census 2001 with a scale between 0 and 17. Ratios below 1 indicate that the income for individuals was below the official definition of poverty. Anti-depressants were common treatments for mental disorders (Sharma et al., 2016). The self-reported intake of anti-depressants might mitigate psychiatric symptoms and reduce suicidal behaviour (Mann et al., 2005).

2.6. Analysis

Logistic regression was used to investigate the associations between suicidal thoughts and sleep disturbance in the total population and the interaction terms of sleep disturbance and any