

## Is there a role for sleep medicine in suicide prevention?

\*Donna L. Littlewood<sup>1, 2, 3</sup> Kirsten Russell<sup>4</sup>

<sup>1</sup> NIHR Greater Manchester Patient Safety Translational Research Centre, The University of Manchester, UK.

<sup>2</sup> Centre for Mental Health and Safety, School of Health Sciences, The University of Manchester, UK.

<sup>3</sup> Manchester Academic Health Science Centre, The University of Manchester, UK.

<sup>4</sup> School of Psychological Sciences and Health, The University of Strathclyde, UK

\* Corresponding author

Centre for Mental Health and Safety, 2.309 Jean McFarlane Building, The University of Manchester, Oxford Road, Manchester, M13 9PL, United Kingdom. Tel: +44(0)161 275 8086. Email: [donna.littlewood@manchester.ac.uk](mailto:donna.littlewood@manchester.ac.uk)

Suicide is a leading cause of preventable death worldwide, accounting for approximately 800,000 deaths per year [1]. Deaths by suicide represent only the “tip of the iceberg” of suicidal experiences, with an even larger proportion of the population reporting having attempted suicide, or thought about doing so [2]. Given the scale of the problem, suicide prevention research has sought to identify psychosocial and demographic factors that are associated with suicidal thoughts and behaviours. In recent years, growing evidence has highlighted links between sleep disorders and suicide [3] as well as non-fatal self-harm [4]. Notably, these relationships remain significant after controlling for symptoms of co-morbid mental illness. The association between sleep disorders and suicidal experiences has been replicated in a wide range of studies; in both clinical [5] and non-clinical populations [3], spanning wide age-ranges including adolescents [6] to older adults [7], and using subjective and objective assessment of sleep disturbance [8].

Research examining the association between sleep disorders and suicidal experiences has predominantly relied on subjective assessment of sleep and self-reported suicidal ideation. A new study by Bishop and colleagues [9], published in this issue, makes a notable and novel contribution to the existing literature by using naturalistic data gathered from medical records to define both predictor and outcomes variables. The authors constructed a cohort, based on objective identifiers of sleep problems, which included diagnostic codes and information about prescribed and filled insomnia medications used in everyday practice. Further data was extracted to identify the presence or absence of a suicide attempt or suicide death during the study period.

Findings from this study make three key contributions to the field. First, insomnia, sleep-related breathing disorders and nightmares were each significantly associated with increased likelihood of a suicidal attempt or death by suicide. Second, once statistical adjustments were made for other key risk factors for suicide, (eg, depression, post-traumatic stress disorder (PTSD), alcohol dependence and medical comorbidity) only the association between insomnia and suicide attempt or death remained significant. This divergent pattern of findings reinforces the importance of examining specific sleep disorders and parameters in order to advance our understanding, as opposed to making conclusions about generalised sleep disturbance. Third, attendance at sleep medicine clinics by people with insomnia or a sleep related breathing disorder were associated with a decreased likelihood of suicide attempt or death. This was a particularly notable finding. Although data regarding the specific interventions or medications prescribed during sleep clinic visits was unavailable, the inclusion of sleep medicine data herein advances the field and suggest that sleep medicine may be an important partner in suicide prevention efforts. In this sense, findings compliment preliminary research evidence that highlighted a reduction in co-morbid suicidal ideation among participants who received cognitive behavioural therapy for insomnia [10, 11] and imagery rehearsal therapy [12]. However, it is important to note that interpretation of the findings presented by Bishop and colleagues [9] should be caveated by the cultural context in which the work was conducted. Specifically, caution is required when applying results beyond the US, where sleep medicine could operate differently as a function of varying health care systems.

Although evidence has consistently demonstrated that sleep is undoubtedly important to mental wellbeing [13], suicidal pathways are complex. Accordingly, for suicide prevention plans to be effective they should take a multifaceted approach. When considering the role of sleep medicine in suicide prevention, we would argue that restoration of healthy sleep could play a significant role as both an “upstream” preventative measure and as a treatment target during acute phases of suicidal experience.

Sleep disturbance not only predicts the onset of mental illness, but it is also implicated in the maintenance and relapse of mental health problems [14, 15]. Given the strong association between mental illness and suicide, assessment and treatment of sleep problems may indirectly reduce risk of suicide, by preventing the onset of, or supporting recovery from mental illness. Furthermore, research has indicated that people may be more likely to seek help for difficulty sleeping in comparison to other symptoms of mental illness, which may be perceived to carry greater stigma [16]. In this sense, it is possible that treating patients for sleep disorders may offer an opportunity to engage them into pursuing further treatment for any co-morbid mental health problems.

Assessment and treatment of sleep disorders should also be included when working with people who currently report suicidal ideation. The results of three methodologically diverse investigations support this assertion. First, poor sleep quality and short sleep duration were found to predict increased severity of next-day suicidal ideation [8]. Second, data from a retrospective chart review indicated that 76% of those who died by suicide had reported sleep problems in the 30 days prior to their death [17]. Third, participants in a qualitative interview study provided insight into the importance of restoring sleep as part of suicide prevention plans [18]. Here, they described how sleep provided an escape from persistent or intrusive suicidal thoughts. Moreover, difficulty sleeping during the night was highlighted as a vulnerable time for suicide attempts, given the reduced availability of healthcare and social support overnight. Whilst offering practical guidance and advice on how to screen and respond to suicide risk in sleep clinics is beyond the scope of the current article, we refer readers to a protocol developed by Drapeau and colleagues [19].

In conclusion, while further research is needed to better understand *how* sleep medicine may contribute to reduced suicide risk, the current paper by Bishop and colleagues [9] adds to the growing evidence pointing to a role for sleep medicine in preventing suicide.

## References

- [1] World Health Organization. Preventing suicide: A global imperative. 2014.
- [2] Nock MK, Borges G, Bromet EJ, Alonso J, Angermeyer M, Beautrais A, et al. Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *The British Journal of Psychiatry*. 2008;192:98-105.
- [3] Pigeon WR, Piquart M, Conner K. Meta-analysis of sleep disturbance and suicidal thoughts and behaviors. *The Journal of clinical psychiatry*. 2012.
- [4] Russell K, Allan S, Beattie L, Bohan J, MacMahon K, Rasmussen S. Sleep problem, suicide and self-harm in university students: A systematic review. *Sleep medicine reviews*. 2019.
- [5] Malik S, Kanwar A, Sim LA, Prokop LJ, Wang Z, Benkhadra K, et al. The association between sleep disturbances and suicidal behaviors in patients with psychiatric diagnoses: a systematic review and meta-analysis. *Systematic reviews*. 2014;3:18.

- [6] Liu J-W, Tu Y-K, Lai Y-F, Lee H-C, Tsai P-S, Chen T-J, et al. Associations between sleep disturbances and suicidal ideation, plans, and attempts in adolescents: a systematic review and meta-analysis. *Sleep*. 2019;42:zsz054.
- [7] Bishop TM, Simons KV, King DA, Pigeon WR. Sleep and suicide in older adults: an opportunity for intervention. *Clinical therapeutics*. 2016;38:2332-9.
- [8] Littlewood DL, Kyle SD, Carter L-A, Peters S, Pratt D, Gooding P. Short sleep duration and poor sleep quality predict next-day suicidal ideation: an ecological momentary assessment study. *Psychological medicine*. 2019;49:403-11.
- [9] Bishop TM, Walsh PG, Ashrafioun L, Lavigne JE, Pigeon WR. Sleep, Suicide Behaviors, and the Protective Role of Sleep Medicine. *Sleep Medicine* 2019.
- [10] Christensen H, Batterham PJ, Gosling JA, Ritterband LM, Griffiths KM, Thorndike FP, et al. Effectiveness of an online insomnia program (SHUTi) for prevention of depressive episodes (the GoodNight Study): a randomised controlled trial. *The Lancet Psychiatry*. 2016;3:333-41.
- [11] Trockel M, Karlin BE, Taylor CB, Brown GK, Manber R. Effects of cognitive behavioral therapy for insomnia on suicidal ideation in veterans. *Sleep*. 2015;38:259-65.
- [12] Ellis TE, Rufino KA, Nadorff MR. Treatment of nightmares in psychiatric inpatients with imagery rehearsal therapy: an open trial and case series. *Behavioral sleep medicine*. 2019;17:112-23.
- [13] Dolsen MR, Asarnow LD, Harvey AG. Insomnia as a transdiagnostic process in psychiatric disorders. *Current psychiatry reports*. 2014;16:471.
- [14] Baglioni C, Battagliese G, Feige B, Spiegelhalder K, Nissen C, Voderholzer U, et al. Insomnia as a predictor of depression: a meta-analytic evaluation of longitudinal epidemiological studies. *Journal of affective disorders*. 2011;135:10-9.
- [15] Hertenstein E, Feige B, Gmeiner T, Kienzler C, Spiegelhalder K, Johann A, et al. Insomnia as a predictor of mental disorders: a systematic review and meta-analysis. *Sleep medicine reviews*. 2018.
- [16] Bernert RA, Iwata NM, Kim JS, Moscovitz A, Hom MA. Perceived stigma toward mental health treatment in association with sleep disturbances and as an acute predictor of suicidal symptoms. . 29th Annual Meeting of the Associated Professional Sleep Societies (SLEEP). Seattle, WA.2015. p. A340.
- [17] Berman AL. Risk factors proximate to suicide and suicide risk assessment in the context of denied suicide ideation. *Suicide and Life-Threatening Behavior*. 2018;48:340-52.
- [18] Littlewood DL, Gooding P, Kyle SD, Pratt D, Peters S. Understanding the role of sleep in suicide risk: qualitative interview study. *BMJ open*. 2016;6:e012113.
- [19] Drapeau CW, Nadorff MR, McCall WV, Titus CE, Barclay N, Payne A. Screening for suicide risk in adult sleep patients. *Sleep medicine reviews*. 2019.