

## Insomnia Is a Risk Factor for Suicide—What Are the Next Steps?

Commentary on Bjørngaard et al. Sleeping problems and suicide in 75,000 Norwegian adults: a 20-year follow-up of the HUNT I study. *SLEEP* 2011;34:1155-1159.

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The establishment of Sleep Medicine as an independent medical specialty was the result of several factors, not the least of which was the recognition that the disorders we treat are serious—in fact, they often are lethal. The relationship between sleep disorders and mortality is perhaps best established for obstructive sleep apnea (OSA). The link between OSA and excess mortality has been known for more than 20 years,<sup>1</sup> and in the time since then, evidence has accumulated for a variety of mechanisms that mediate this excess mortality (i.e., cardiovascular disease and motor vehicle accidents), and that treatment of OSA mitigates these intervening mechanisms and perhaps thereby reduces the risk of death from OSA.<sup>2</sup>

In contrast, the story is less well developed for a link between insomnia and mortality, but evidence is accumulating showing a connection between insomnia and suicide. We recently reviewed this literature,<sup>3</sup> describing 25 studies that reported sleep problems as a risk factor for suicidal ideation, or suicide attempts, or suicide death. In the brief period since our report, six additional investigations have confirmed this association, including the paper by Bjørngaard et al. in this issue of *SLEEP*.<sup>4-9</sup> Most of the prior reports have been large, cross-sectional surveys of general populations or clinical samples, but in either case, most of these reports were limited by (1) lack of follow up, (2) diagnoses of insomnia and mental disorders that did not strictly follow clinically accepted processes, and (3) the stipulation of suicidal ideation, as opposed to suicide death, as the primary endpoint.

There are, however, a number of *prospective* studies reporting that sleep disturbance is predictive of suicide death,<sup>10-13</sup> including that of Bjørngaard et al.<sup>4</sup> Some of these prospective reports covaried for mental symptoms, and generally these have still shown that sleep disturbance remained a predictor of suicide death. The prospective studies, while methodologically superior to the cross-sectional surveys, still suffer from non-standard assessments for making diagnoses of insomnia and mental disorders.

The report by Bjørngaard and colleagues<sup>4</sup> in this issue of *SLEEP* represents an additional advance in the insomnia-suicide story. This paper describes an effort to survey all the residents of a single county in Norway between 1984 and 1986

who were > 20 years old, including self-report measurements of sleep problems and depression/anxiety symptoms. The authors succeeded in capturing > 85% of the residents of the county, and then used death registries to ascertain suicide over the ensuing 20 years. Positive associations were shown between sleep problem frequency and suicide death, even after adjusting for depression and anxiety symptoms. Furthermore, the association between sleep problem frequency and suicide death showed a dose-response relationship, with crude odd ratios up to 4.9 for “almost every night” sleeping problems. The strengths of the investigation include (1) the large sample size, (2) the inclusiveness of the sampling within a single county, (3) minimization of missing data, and (4) the use of a death registry. Limitations included the use of non-standard assessments for making diagnosis of insomnia and mental disorders.

While the study by Bjørngaard and colleagues largely confirms what has been reported by others, additional findings of their present study offer a few new twists. First, the association between sleep problems and suicide death is stronger in younger than older people. The authors may be correct that normal age-related changes in the sleep of the elderly may “wash out” the ability to observe an effect of sleep problems on suicide death in this age group. Second, this study found that the association between sleep problems and suicide death was strongest in the first 10 years of observation rather than the last 10 years. A similar temporal relationship between insomnia and suicide death was reported by Fawcett et al.,<sup>10</sup> who found that the link was strongest in the earlier portion of the follow up period and weakened thereafter. A possible explanation is that the intensity of insomnia varies over time, and some persons with insomnia at intake may no longer have it years later. The third surprising finding was that the use of medications to facilitate sleep mitigated the risk of suicide death in those respondents with sleep problems. This is in contradistinction to the findings of others who found that persons who used prescribed sleep medication had a higher rate of suicidal ideation than those who did not use sleep medication.<sup>5,14</sup> However, this association might be mediated by the severity of the sleep problems rather than by the use of sleep aids per se.

The article by Bjørngaard et al.<sup>4</sup> is the latest in a series of more than 30 separate research articles showing that insomnia/sleep disturbance are risk factors for suicidal ideation, suicidal behavior, and death by suicide. Moreover, the sources of the data are derived from sample of the young and the elderly, and from many different countries. The time has come to recognize insomnia as a risk factor for suicide, and include it in the list of potentially modifiable risk factors. Strangely, while experts in suicide have called for suicide-prevention studies, insomnia

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has been consistently ignored.<sup>15</sup> Until such time as studies in prevention are conducted, insomnia should still be presented to clinicians as an indicator of suicidal ideation in depressed patients, and worsening insomnia should be viewed as a reason to press deeper for thoughts of suicide.

Future research into this topic should consider possible mediating mechanisms for the insomnia-suicide link. Both physiologic/neurochemical and psychological mechanisms should be considered. After a theoretical framework for explaining the insomnia-suicide link has been proposed, efforts should move in the direction of treatment and prevention; namely, will treatment of insomnia/sleep problems reduce the rate of suicidal ideation, suicidal behavior, and suicide death. Needless to say, this final stage of research development is a high stakes/high reward proposition that would require the most careful approaches.

Completion of this research agenda would move insomnia alongside OSA as a sleep disorder with a strong association with excess mortality, a plausible mediating mechanism, and an intervention strategy that is proven to reduce mortality, or at least reduce risk through surrogate variables for suicide death.

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