

What role do nightmares play in suicide? A brief exploration

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The suicide rate in the United States has climbed each year for more than a decade, highlighting the need for greater understanding of, and prevention strategies for suicidal behavior. Nightmares have been shown to be associated with suicidal behavior independent of several psychiatric risk factors for suicide, such as symptoms of depression, anxiety, and posttraumatic stress disorder (PTSD). The specific role of nightmares in contributing to suicide remains unclear due to the difficulty in delineating causal factors. However, the reporting, screening and treatment of nightmares continues to remain rare making progress difficult. Research is beginning to make some progress in uncovering the mechanisms by which nightmares increase suicide risk providing opportunities for intervention and prediction of suicidal behaviors.

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Introduction

The suicide rate in the United States has climbed each year for more than a decade, highlighting the need for greater understanding of, and prevention strategies for suicidal behavior [1]. In 2015, an estimated 800 000 lives were lost due to suicide worldwide [2]. In the same year, suicide was the 10th leading cause of death in the United States, accounting for 44 193 deaths [3]. In a recent study, Cerel and colleagues [4] examined exposure to suicide, showing negative outcomes for those exposed to suicide. In their sample, 48% of individuals had a lifetime exposure to suicide, and within that group participants reported more symptoms of depression and anxiety. Further, those that were suicide-exposed were more likely to report suicidal ideation than those not exposed (9% versus 5%). Therefore, although not contagious in the medical

sense, suicide exposure can increase risk of suicidal behavior in those that are exposed. Given this, it is imperative to identify individuals who are at risk of suicide in order to not only directly prevent suicide, but also to try to limit exposure to suicide.

Nightmares defined

Nightmares are frightening or disturbing dreams that disrupt an individual's sleep to the point of startling them awake [5]. Diagnostic criteria for nightmare disorder collectively focus on nightmares being repetitious over time and meeting a diagnostic threshold around one month of duration, with a frequency of at least one occurrence a week.

Further, nightmares seem to function as well-remembered and themed dreams that occur almost exclusively in REM sleep (which is more prevalent during the latter half of the sleep period). During a nightmare an individual is often startled awake, becoming highly alert and quickly oriented to their surroundings [6]. Both bad dreams and night terrors are parasomnias, however, bad dreams do not cause startled awakening, and night terrors are a non-REM sleep disturbance.

Nightmare prevalence

As is true with many mental health concerns, nightmares are under-reported to healthcare providers, and thus may be underestimated in prevalence estimates [7[•]]. Current estimates suggest that nightmare prevalence varies depending on age and sex. Approximately 1.3–3.9% of preschool-age children [8] and as many as 50% of children between the ages of 3 and 6 [9] report experiencing nightmares. Nightmares are less common in the elderly when compared to college students (19.5% college students > 4.3% older adults) [10], though they can be elevated even in late life in individuals with anxiety [11,12]. Nightmares are also a function of sex, with women reporting more monthly nightmares as compared to men until the age of 60. Women also report an increase in nightmare frequency from the ages of 10 to 19, and 20 to 39, followed by decreased from ages 50 to 59, and consistent rates from age 60 and on. Men showed consistent rates from ages the ages 10 to 19, and 20 to 39 and then decreased from age 50 to 59 [13]. Although age and sex seems to impact prevalence rates, location does not seem to be relevant, as these rates are comparable across countries (i.e., United States, Canada, Japan, Iceland, Sweden, France, and Belgium) [7[•]].

Nightmares and psychopathology

Nightmares have been associated with several mental illnesses, and are more prevalent in clinical samples [14]. One of the most widely known associations with nightmares is posttraumatic stress disorder (PTSD) [15]. Although not all individuals living with a PTSD diagnosis have nightmares, those who report having nightmares typically have more severe PTSD symptomology [16]. Further, up to 70% of individuals reporting nightmares also meet criteria for a diagnosis of PTSD [17], and 60% of individuals who developed PTSD report nightmares before experience the trauma [18]. This comorbidity suggests a common vulnerability by which PTSD and/or that nightmares serve as risk-factors for each other. Nightmares have also been linked to anxiety [19], psychosis and schizophrenia [14,20,21], borderline personality disorder [22–24], and substance use [5,25].

Nightmares and suicide

Nightmares are an important contributing factor in suicide risk, although the specific role in contributing to suicide remains unclear. Nightmares have been shown to be associated with suicidal behavior independent of several psychiatric risk factors for suicide, such as symptoms of depression, anxiety, and PTSD [26–28]. When controlling for those symptoms, nightmares remained significant among those with increase suicidal ideation in both inpatient and community sample [29,30]. These findings further corroborate the importance of nightmares, independent of the symptoms associated with depression, anxiety, and PTSD, in understanding suicidal behavior. Sjöström and colleagues [27], examined a sample of 165 inpatients from 18 to 68 years old that were admitted following a suicide attempt. In the sample, 66% experienced nightmares: 33% of those met criteria for severe nightmares; 33% experienced moderate severity. Results showed that those with nightmares had the strongest association with suicidality using the Suicidality Assessment Scale (SUAS) [31].

In addition to the association between nightmares and suicidal behavior, nightmares have also been shown to prospectively predict suicide attempts and deaths. For instance, Sjöström *et al.* [32], followed individuals who had previously attempted suicide for two years, finding the presence of frequent nightmares was related to a 4-fold risk for repeated suicidal behavior after adjusting for depression, anxiety, PTSD, and substance use disorders. For individuals that experienced nightmares before a suicide attempt, they were four times as likely to make a suicide attempt in the future. Similarly, nightmares have been shown to prospectively predict death by suicide. In a large prospective study, those who reported experiencing the occasional nightmare were 57% more likely to die by suicide, whereas those who reported experiencing frequent nightmares were 107% more likely to die by suicide [33]. Moreover, these results held when

insomnia, depression, life stress, and anxiety were accounted for. Additionally, Sandman and colleagues [34] re-examined the same data set which Tanskanen *et al.* [33], used but expanded the data by including war veterans. Results confirmed previous findings, showing that nightmares are an independent risk factor for suicide, and the increase in frequency of nightmares also increased risk.

Research has also demonstrated that it is not just the presence of nightmares that increase suicide risk, but also their persistence [35]. For instance, Sjöström *et al.* [32] found that persistent nightmares predicted a greater risk of future suicide attempts.

Nadorff *et al.* [35] also examined the role of duration in sleep disturbances and suicide risk in a cross-sectional sample of 673 college students. The results showed that the duration of nightmares was significantly associated with suicide risk independent of the current level of nightmare severity. Moreover, it is important to consider not only the presence and severity of nightmares but the length of time an individual has experienced nightmares when assessing and predicting suicide risk.

Treatment

Nightmares are associated with an increase in suicidal behavioral and comorbid with PTSD, depression, anxiety and other psychopathology. Yet the reporting, screening and treatment of nightmares continues to remain rare [7[•]]. Research indicates a portion of under treatment of nightmares is partially due to individuals not disclosing nightmare symptoms to health care providers. According to Nadorff *et al.* [7[•]], 66.2% of individuals in an online sample that reported clinically significant nightmares symptoms did not discuss the nightmares with a health-care provider. This study also found a relation between severity and reporting, which indicated that the more severe nightmare sufferers were more likely to report their symptoms to a healthcare provider, suggesting there is an opportunity to intervene with those suffering most. However, this also shows opportunity to screen for nightmares in order to treat those individuals experiencing nightmares who have yet to disclose to their healthcare provider. Routine screening, especially in those at risk for suicide, or those with comorbid pathology such as PTSD, depression, and anxiety should be screened regularly to ensure referral for treatment.

There are both pharmacological and cognitive-behavioral interventions for nightmares that have been shown to be effective. Of the pharmacological treatments, the one with the greatest empirical support is prazosin. Prazosin is a drug used for high blood pressure and anxiety, but has also shown to significantly improve nightmares. However, research suggests that the nightmares commonly return when prazosin is discontinued [6]. Additionally, further

research is needed investigating the implications for long-term use and duration of improvement has yet to be examined [36*].

Imagery rehearsal therapy (IRT) has the strongest empirical support of any psychological treatment for nightmare disorder [37]. IRT is a recommended treatment for nightmare disorder [38], and in a 2016 meta-analysis, Van Shagen and colleagues [39] found that IRT was effective in treating nightmares in a patient sample that included a range different psychopathology. Results also showed moderate benefits when compared to treatment as usual when examining nightmare distress, general psychopathology, and PTSD related symptoms. Additionally, in the six and nine-month follow-ups the results showed sustained improvements. Although the literature on IRT is very positive, some studies have showed that it may not be as effective for individuals with verbal memory deficits [40]. Thus, although IRT is likely effective for most individuals, further research is needed to better understand who will most benefit from this therapy.

Conclusion

With the suicide rate consistently rising over the last decade, and a recent meta-analysis showing that we have made little progress in predicting suicidal behavior in the last fifty years [41**], there is a tremendous need for us to re-evaluate the ways we identify and treat suicide risk. Nightmares have the potential to play an important role in this regard. In addition to being associated with several forms of psychopathology, nightmares have been associated with suicide ideation and suicide attempts in samples of youth, adults, and older adults, as well as death by suicide in adult samples. Notably, many of these associations have been independent of important suicide risk factors, such as symptoms of anxiety, depression, and PTSD. Nightmares have also independently predicted repeat suicide attempts and, when chronic, can increase the risk for suicide in adults and older adults. However, we are unaware of any suicide risk measure that includes assessment of sleep problems, let alone nightmares. This is a missed opportunity, as their inclusion may lead to better prediction of suicide risk.

Research is beginning to make some progress in uncovering the mechanisms by which nightmares increase suicide risk [42,43]. Further examination for potential mechanisms is needed, especially over multiple time points, in order to better understand why and how nightmares confer increased suicide risk. Another potentially promising area of research includes investigating whether treating nightmares can reduce suicide risk, as has been shown in one uncontrolled trial of inpatient adults [44*]. Though it is unclear whether nightmares are a causal factor in the transition from thinking about to attempting suicide, they appear to have a role in the process and are

worthy of attention in the assessment and treatment of suicide risk.

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Conflicts of interest statement

Nothing declared.

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