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Insomnia Symptoms, Nightmares, and Suicide Risk: Duration of Sleep Disturbance Matters

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Duration of insomnia symptoms or nightmares was investigated to see if it was related to suicide risk independent of current insomnia symptoms, nightmares, anxiety symptoms, depressive symptoms, and posttraumatic symptoms. The cross-sectional study involved analyses of survey responses from undergraduate students who endorsed either insomnia symptoms (n = 660) or nightmares (n = 312). Both insomnia symptom and nightmare duration were significantly associated with suicide risk independent of current insomnia symptoms or nightmares, respectively. Relations were also significant after controlling for anxiety symptoms, depressive symptoms, and posttraumatic symptoms. Results suggest that duration of sleep disturbance is relevant when assessing suicide risk.

Suicide is a large and growing problem in the United States. In 2009, suicide was the tenth leading cause of death in the country, accounting for 36,909 deaths. Although suicide rates had remained fairly steady for many years, 2009 was the fourth straight year in which suicide rates increased, with the suicide rate for that year, 12.0/100,000, being the highest suicide rate in a decade (McIntosh, 2012). Thus, the quest to determine what factors are associated with suicidal behaviors is imperative.

Prior studies have shown that insomnia symptoms and nightmares are related to suicidal ideation, attempts, and suicides (Barbe et al., 2005; Hall, Platt, & Hall, 1999; McGirr et al., 2007; Nadorff, Nazem, & Fiske, 2011; Sjöström, Hetta, & Wærn, 2009; Tanskanen et al., 2001). For example, symptoms of insomnia were found to be significantly more common in a cross-sectional examination of depressed youth (ages 7–17) who reported suicidal ideation than in depressed youth who did not report suicidal ideation (Barbe et al., 2005). Insomnia symptoms were also commonly reported by those who have made medically serious suicide attempts (Hall et al., 1999). Furthermore, two prospective studies and one retrospective study found that insomnia symptoms were associated with death by suicide (Fawcett et al., 1990; Fujino, Mizoue, Tokui, & Yoshimura, 2005; McGirr et al., 2007).

Evidence suggests that the relation between insomnia symptoms and suicidal behaviors may be explained by depressive symptoms. In a cross-sectional survey of 583 college students, we found that the relation between insomnia symptoms and suicidal ideation was fully mediated by depressive symptoms (Nadorff et al., 2011).

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Nonetheless, research suggests that insomnia symptoms often precede depressive symptoms (Perlis et al., 2006), suggesting that insomnia symptoms may be a critical factor in the development of depression and suicidal ideation.

Similar findings have emerged in studies that investigated the relation between nightmares and suicidal behaviors. Nightmares have been shown to be associated with suicidal ideation (e.g., Cukrowicz et al., 2006), suicide attempts (Sjöström, Wærn, & Hetta, 2007), and death by suicide (Tanskanen et al., 2001). For example, in a study examining the relation between nightmares and death by suicide, when compared with individuals without nightmares, those who reported experiencing occasional nightmares were at 57% greater risk to die by suicide, and those who reported experiencing frequent nightmares were at 107% greater risk of suicide (Tanskanen et al., 2001). However, unlike insomnia symptoms, nightmares remained a significant predictor of suicidal behavior independent of psychopathology. In a cross-sectional sample of college students, nightmares were associated with suicidal ideation after controlling for depressive symptoms, anxiety symptoms, and posttraumatic symptoms (Nadorff et al., 2011). Additionally, nightmares were related to high suicidality scores in individuals who had made a medically serious suicide attempt (Sjöström et al., 2007); individuals who reported having nightmares were at 4.8 times greater risk of re-attempting suicide than those who did not report experiencing nightmares, even after controlling for Axis I disorders (Sjöström et al., 2009).

What remains unclear from this research, however, is why insomnia symptoms and nightmares are associated with suicidal behaviors. One aspect of insomnia symptoms and nightmares that may be relevant is the duration of symptoms. A qualitative study by Kyle, Espie, and Morgan (2010) found that individuals who experienced persistent insomnia experienced a cumulative negative effect on work and social activities. In other words, the longer an individual had insomnia, the more severe the negative consequences. Participants also reported feeling isolated, as well as lacking life aspirations.

The Interpersonal-Psychological Theory of Suicide (Joiner, 2005) postulates that feelings of isolation are associated with desire for suicide, which may help explain the relation between insomnia symptoms and suicide. Additionally, insomnia has a negative consequence on one's work and social activities, which may lead the individual to believe they are a burden (Roth & Ancoli-Israel, 1999). These hypotheses are supported by Bryan's 2011 study, which found insomnia severity was positively associated with thwarted belongingness (r = .40) as well as perceived burdensomeness (r = .29), suggesting that insomnia symptom severity may be predictive of these two critical suicide ideation risk factors.

A similar relation may exist with regard to nightmares and suicidal behaviors such that longer duration of nightmares may be associated with more hopelessness and isolation, as the nightmare sufferer may feel unable to escape the distress and impairment caused by the nightmares, which could lead to feelings of hopelessness. To our knowledge, however, duration of insomnia symptoms or nightmares has not been examined in relation to suicidal outcomes.

PRESENT STUDY

The purpose of the present study was to further characterize the association between insomnia symptoms, nightmares, and suicide risk using a cross-sectional design. We aimed to extend the findings of our previous work (Nadorff et al., 2011) in a new sample by examining duration as one aspect of insomnia symptoms and nightmares that may play a role in the relation between insomnia symptoms, nightmares, and suicide risk. Our first hypothesis was that insomnia symptom duration would be associated with suicide risk independent of current level of insomnia symptoms.

Similarly, our second hypothesis predicted that nightmare duration would be associated with suicide risk independent of current level of nightmare symptoms. Lastly, our third hypothesis predicted that nightmare duration and insomnia symptom duration would be significantly related to suicide risk after controlling for current depressive symptoms, anxiety symptoms, and posttraumatic symptoms, in addition to current insomnia symptoms and nightmares.

METHOD

Participants

Participants were drawn from a survey of 673 students from a large, public university in the mid-Atlantic United States. The participants for the current analyses included two overlapping subsets: those who endorsed any insomnia symptoms (n = 660); and those who endorsed any nightmares (n = 312). The sample of individuals who indorsed insomnia symptoms was 72% female (1 missing sex), with an age range of 18 to 36 years (Mean age = 20.0 years, SD = 2.4 years). In keeping with the characteristics of the region, most participants (92.1%) were Caucasian. The sample of individuals who endorsed nightmares was 79% female, with an age range of 18 to 36 years (Mean age = 20.0 years, SD = 2.3 years). A large majority of the participants (92.9%) were Caucasian. Participants were recruited using the SONA system, which is an online survey manager, and were given course credit for participating in the study.

Measures

The Disturbing Dreams and Nightmare Severity Index. The Disturbing Dreams and Nightmare Severity Index (DDNSI; Krakow et al., 2002), a revised version of the Nightmare Frequency Questionnaire (Krakow et al., 2000), was used to measure nightmare severity and frequency for the last year. It measures the number of nights with nightmares per week (0–7 nights) and number of total nightmares per week (up to 14 nightmares). The DDNSI also measures the severity and intensity of the nightmares on a Likert-type scale, ranging from *no problem* (0) to *extremely severe problem* (6), as well as how often nightmares result in awakenings, ranging from *never/rarely* (0) to *always* (4). A score greater than 10 may indicate the presence of a nightmare disorder (Krakow et al., 2002). In the overall sample, the mean was 4.14 (SD = 5.84) with acceptable reliability (a = .90).

The Insomnia Severity Index. The Insomnia Severity Index (ISI; Bastien, Vallieres, & Morin, 2001) is a 7-item, self-report scale that assesses the individual's insomnia symptoms for the past 2 weeks. Each item is scored on a 0–4 scale with total scores ranging from 0 to 28. Scores of 0–14 are considered to reflect no insomnia or subclinical insomnia, 15–21 are considered an indicator of moderate insomnia, and 22–28 are considered to indicate severe insomnia. The ISI has been shown to have adequate test–retest reliability over 3 months and concurrent validity with sleep diaries and polysomnography (Bastien et al., 2001; Savard, Savard, Simard, & Ivers, 2005). The ISI has also been used to determine the presence or absence of clinically significant insomnia symptoms using a cutoff of 15 (Bernert, Turvey, Conwell, & Joiner, 2007; Tang, Wright, & Salkovskis, 2007). In the overall sample, the mean was 8.04 (SD = 4.65) with acceptable reliability (a = .84).

Insomnia and Nightmare Duration. In somnia symptom duration was assessed by asking participants: "If you have an insomnia problem, how long have you had it for (please specify months and years)?" These data were converted to months, resulting in a total number of months the person reported having insomnia. The data were checked to ensure that there were no out of range responses. Looking at those who had at least a score of 1 on the ISI, insomnia symptom duration ranged from 0 to

252 months, with the mean being 5.24 months (*SD* = 21.86). Similarly, nightmare duration was assessed using one of the questions from the DDNSI that does not contribute to the total score for the measure. Participants were asked: "Please estimate the number of months or years you have had disturbing dreams and/or nightmares. How many months? How many years?" (Krakow et al., 2002). As with the insomnia symptom duration, the data were converted to months to provide the number of months the participant reported having had nightmares. The data were checked to ensure that no responses were out of range. For those who had at least a score of 1 on the DDNSI, nightmare duration ranged from 0 to 360 months, with the mean being 73.48 months (*SD* = 79.17).

The Center of Epidemiological Studies Depression Scale. The Center of Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) is a 20-item, self-report measure of depressive symptoms. The CES-D is scored on a 4-point scale (0–3) with scores ranging from 0 to 60. A score of 16 is commonly used as the cutoff indicating that depressive symptoms are clinically significant (Radloff, 1977). The CES-D has acceptable internal consistency for both the general (α = .85) and clinical (α = .90) populations (Radloff, 1977). It has been demonstrated to be a valid screening measure for detecting depressive symptoms (Weissman, Sholomskas, Pottenger, Prusoff, & Locke, 1977). In the overall sample, the mean was 15.47 (*SD* = 9.97) with acceptable reliability (*a* = .91). Although this mean is high, the proportion of participants over cutoff is consistent with findings from an earlier study conducted at the same university (Nadorff et al., 2011), as well as studies conducted at other universities (e.g., Garlow et al., 2008). To minimize multicollinearity, the item "My sleep was restless" (Radloff, 1977) was excluded from our regression analyses.

The PTSD Checklist-Civilian Version. The PTSD Checklist-Civilian Version (PCL-CL; Weathers, Litz, Herman, Huska, & Keane, 1993) is a measure of posttraumatic stress disorder (PTSD) symptom severity. It consists of 17 questions which ask participants to rate how much each symptom bothers them on a scale ranging from 1 *(not at all)* to 5 *(extremely)*, with total scores ranging from 17 to 85. There is no single, agreed-on cutoff for the PCL, but 44 and 50 have each been used as cutoff scores in prior research (Ruggiero, Del Ben, Scotti, & Rabalais, 2003). The PCL has high internal consistency (α = .94) and has demonstrated convergent validity with respect to a clinician-administered PTSD scale (Peterlin, Tietjen, Meng, Lidicker, & Bigal, 2008). In the overall sample, the mean was 32.66 (*SD* = 11.87) with acceptable reliability (*a* = .92). To minimize multicollinearity, the items "Repeated, disturbing dreams of a stressful experience" and "Trouble falling or staying asleep" (Weathers et al., 1993) were excluded from our regression analyses.

The Zung Self-Rating Anxiety Scale. The Zung Self-Rating Anxiety Scale (SAS; Zung, 1971) is a 20-item measure that assesses anxiety symptoms over the last several days. Each item is rated on a 4-point Likert-type scale. Response options range from 1 *(None or a little of the time)* to 4 *(Most of the time)*. The total score ranges from 20 to 80 with scores of 50 or higher indicating clinically significant anxiety symptoms (Zung, 1986). The SAS has been shown to discriminate between a normal adult sample and those with anxiety disorders (Zung, 1986). In the overall sample, the mean was 34.70 (*SD* = 8.59) with acceptable reliability (*a* = .87). To minimize multicollinearity, the items "I fall asleep easily and get a good night's rest" and "I have nightmares" (Zung, 1971) were excluded from our regression analyses.

The Suicidal Behaviors Questionnaire-Revised. The Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001), revised from the SBQ (Linehan, 1981), is a 4-item, self-report measure designed to assess levels of suicidal risk. The SBQ's four items are summed to create a score ranging from 3 to 18. The first item inquires about past suicidal thoughts and suicide attempts, the second and third items

assess past suicidal ideation and threats, and the fourth item asks about future suicidal behavior. It has acceptable internal consistency with an alpha of 0.88 in a clinical sample and 0.87 in a nonclinical sample (Osman et al., 2001). A cutoff score of 7 for the general population or 8 for psychiatric inpatients may be used to determine clinically significant levels of suicide risk (Osman et al., 2001). In the overall sample, the mean was 4.60 (SD = 2.64) with acceptable reliability (a = .85).

Procedure

Data were collected using the SONA online survey system. Participants logged onto the SONA system and selected the study. Participants were asked to read a cover sheet informing them of the purpose of the project and their rights as a participant. At the conclusion of the survey, participants were shown a referral sheet with contact information for local mental health services should they desire counseling following the study. Participants were awarded course credit for participating in the study.

Analyses

Because data were collected via an online survey, special steps were taken to check data quality prior to conducting analyses. Specifically, participants who took 10 minutes or less to complete the survey (duration M = 28.7, SD = 14.4) were removed from the data set. Of the original 721 participants in the data set, nine were removed for this reason. An additional 39 records were removed from the dataset due to potentially biased response set, inconsistent responding, or missing data for the dependent variable. As a result, data from 673 individuals comprised the overall study sample, from which participants were drawn for the current study. Means, standard deviations, and proportions of the sample above clinical cutoff on all study measures for both the insomnia and nightmare samples can be found in Tables 1 and 2, and the correlations among study variables are found in Table 3.

The study measures were also examined for normality of their distributions. The SBQ deviated from normality (skew = 2.0, kurtosis = 3.8). A log transformation was employed to restore normality. Following the transformation, the skew (1.29) and kurtosis (0.58) were reduced.

For the insomnia symptom and nightmare duration variables, insomnia symptom duration was only included for participants with at least a score of 1 on the ISI, and nightmare duration was only included for

TABLE 1
Descriptive Statistics and the Proportion of the Sample over the Clinical Cutoff for Those Reporting at Least One Insomnia Symptom[a]

Measure	n	Mean	SD	Clinical cutoff	% Over clinical cutoff
Insomnia symptoms	660	8.17	4.58	15	9.9%
Insomnia symptom duration[b]	654	5.16	21.85	N/A	N/A
Nightmares	654	4.14	5.81	11	15.1%
Nightmare duration[c]	283	73.38	79.17	N/A	N/A
Depressive symptoms	636	15.53	9.97	16	44.3%
PTSD symptoms	648	32.72	11.81	50	11.6%
Anxiety symptoms	649	35.76	8.57	50	7.7%
Suicide risk	652	4.63	2.65	7	16.6%

[a]Statistics are before items involving sleep were removed from the measures of depressive symptoms, PTSD symptoms, and anxiety symptoms.
[b]Number of months. Excludes individuals reporting no insomnia symptoms.
[c]Number of months. Excludes individuals reporting no nightmares.

TABLE 2
Descriptive Statistics and the Proportion of the Sample over the Clinical Cutoff for Individuals Reporting Nightmares[a]

Measure	*n*	Mean	*SD*	Clinical cutoff	% Over clinical cutoff
Insomnia symptoms	310	9.45	4.64	15	12.6%
Insomnia symptom duration[b]	302	7.12	24.80	N/A	N/A
Nightmares	312	8.85	5.60	11	32.05%
Nightmare duration[c]	288	73.93	79.52	N/A	N/A
Depressive symptoms	302	17.99	10.10	16	55.6%
PTSD symptoms	306	37.16	12.23	50	18.6%
Anxiety symptoms	306	38.94	8.75	50	12.8%
Suicide risk	307	5.14	3.01	7	22.2%

[a]Statistics are before items involving sleep were removed from the measures of depressive symptoms, PTSD symptoms, and anxiety symptoms.
[b]Number of months. Excludes individuals reporting no insomnia symptoms.
[c]Number of months. Excludes individuals reporting no nightmares.

TABLE 3
Correlations of Study Variables

Variable	1	2	3	4	5	6	7	8
1. Insomnia symptoms	–	.22**	.36**	.00	.52**	.50**	.61**	.26**
2. Insomnia duration	.24**	–	.13**	.07	.14**	.10*	.12**	.23**
3. Nightmare symptoms	.32**	.14*	–	.03	.33**	.44**	.46**	.25**
4. Nightmare duration	−.00	.07	.05	–	.08	.08	.01	.16**
5. Depressive symptoms	.52**	.17**	.37**	.09	–	.74**	.78**	.47**
6. PTSD symptoms	.44**	.12*	.42**	.08	.72**	–	.77**	.43**
7. Anxiety symptoms	.62**	.13*	.41**	.01	.79**	.75**	–	.35**
8. Suicide risk	.23**	.31**	.21**	.17**	.50**	.42**	.34**	–

Note. Correlations for the insomnia symptom sample are above the diagonal and correlations for the nightmare sample are below the diagonal. Sample sizes ranged from 665 to 291, with the missing data being primarily due to reporting nightmare duration for those individuals without nightmares as missing. Correlations are after overlapping items were removed from the control variables. PTSD; posttraumatic stress disorder.
*$p < .05$, **$p < .01$.

participants with at least a score of 1 on the DDNSI. This resulted in different sample sizes being used for analyses utilizing insomnia or nightmare duration. Descriptive statistics and correlations of study measures for both samples can be found in Tables 1 through 3.

The high correlations among depressive symptoms, anxiety symptoms, and posttraumatic symptoms raised questions regarding potential multicollinearity. To help reduce multicollinearity, the sleep items were removed from the covariate variables (i.e., the CESD, SAS, and PCL) to minimize their shared variance with our independent variables. Following removal, to test whether multicollinearity was an issue in this sample, the variance inflation factor (VIF) and tolerance were calculated. The VIF statistics for all variables were under 10 (range = 1.07–3.14), and tolerance was above 0.1 (range = .32–.98), indicating that multicollinearity was not a significant issue for this sample.

An ANOVA was utilized to test for effects of sex and a regression analysis for age. Neither sex, F (1,662) = .74, p = .39, nor age, β = .002, p = .96, was significantly related to suicide risk. Interaction effects were calculated between age, sex, and all of the independent variables, with none reaching significance. Thus, sex and age were not included as covariates in the analyses. All analyses were conducted using SAS v. 9.2 statistical software (SAS Institute Inc., Cary, NC, USA).

RESULTS

The first hypothesis, which predicted that insomnia symptom duration would be significantly associated with suicide risk independent of level of current insomnia symptoms, was tested using a linear regression. The overall regression was significant, N = *646*, F(2,643) = 33.31, p < .01, R^2 = .09, and both the level of insomnia symptoms, β = .23, p < .01, and insomnia symptom duration, β = .16, p < .01, were significantly associated with suicide risk. Thus, the first hypothesis was supported.

The second hypothesis, which predicted that nightmare duration would be significantly associated with suicide risk independent of level of current nightmares, was tested using a linear regression. The overall regression was significant, N = 283, F(2,280) = 9.36, p < .01, R^2 = .06, and both current level of nightmares, β = .18, p < .01, and nightmare duration, β = .16, p < .01, were significantly associated with suicide risk. Thus, the second hypothesis was also supported.

To test the third hypothesis, which predicted that insomnia symptoms and nightmare duration would be significantly related to suicide risk after controlling for depressive symptoms, anxiety symptoms, and posttraumatic symptoms, current insomnia and current nightmares, a multiple linear regression was utilized in a subset of participants who endorsed both insomnia symptoms and nightmares (see Table 4). Depressive symptoms, anxiety symptoms, posttraumatic symptoms, insomnia, and nightmares were added in the first step of the regression, whereas insomnia symptom duration and nightmare duration were added in the second step. The overall regression was significant in step one, N = 288, F(5,282) = 21.85, p < .01, R^2 = .28. Depressive symptoms and posttraumatic symptoms were positively associated with suicide risk, and symptoms of anxiety were negatively associated with suicide risk. Frequency and severity of insomnia symptoms and nightmares were not significantly related to suicide risk. In step two, the results were the same except both insomnia symptom duration and nightmare duration were significantly positively associated with suicide risk, and anxiety symptoms were no longer related to suicide risk. The R^2 change between the first and second step was significant, R^2 change = .050, F(1,258) = 19.00, p < .01. Therefore, the third hypothesis was supported, as insomnia symptoms and nightmare duration were both associated

TABLE 4
*Insomnia and Nightmare Duration Predicting Suicide Risk, Controlling for Other Symptoms of Psychopathology Including Insomnia and Nightmare Symptoms**

Predictors	R^2	β	t	p
Step 1	.28			<.01
Insomnia symptoms		.00	.07	.95
Nightmare symptoms		.01	.24	.81
Depressive symptoms		.50	5.86	<.01
Anxiety symptoms		−.18	−2.03	.04
PTSD symptoms		.20	2.52	.01
Step 2	.33			
Insomnia symptom duration		.23	4.26	<.01
Nightmare duration		.13	2.41	.02

Significant results shown in boldface type.
*Statistics are after items involving sleep were removed from the measures of depressive symptoms, PTSD symptoms, and anxiety symptoms.

with suicide risk after controlling for current depressive symptoms, anxiety symptoms, posttraumatic symptoms, insomnia symptoms, and nightmares.

DISCUSSION

The current study is significant as, to the best of our knowledge, it is the first study examining duration of insomnia symptoms or nightmares in relation to suicide risk. The findings demonstrate that the duration of both insomnia symptoms and nightmares are associated with suicide risk independent of each other, as well as current symptoms of psychopathology, and are thus important factors to consider in relation to suicide risk.

Our findings are consistent with the research examining the relation between persistent insomnia, nightmares, and suicidal behavior. Sjöström et al. (2009) followed suicide attempters for 2 years to determine whether sleep problems increased the risk of future attempts. They found stronger associations between persistent insomnia and nightmare difficulties (defined as having insomnia or nightmares both at baseline and 2 month follow-up following the attempt) and suicide attempts when compared with the relations between baseline levels of insomnia symptoms and nightmares in relation to suicide attempts. Thus, the findings of the our study build on the findings of Sjöström et al., suggesting that symptom duration is important in relation to suicide risk.

The finding that insomnia symptom duration is associated with suicide risk after controlling for depressive symptoms is particularly interesting, as the relation between insomnia symptoms and suicide risk has been found to be explained by depressive symptoms in previous research (Cukrowicz et al., 2006; Nadorff et al., 2011). These findings suggest that there may be different mechanisms underlying the relations between suicidality and insomnia symptom duration versus current insomnia symptoms. For instance, long standing symptoms of insomnia may be more likely to reflect a sleep disorder than to reflect symptoms of depression, anxiety, or PTSD, which may explain why these variables did not explain the relation between insomnia symptom duration and suicide risk.

The results of the current study are consistent with the previous literature demonstrating that nightmares are associated with suicide risk independent of symptoms of psychopathology (Cukrowicz et al., 2006; Nadorff et al., 2011). However, the current study adds to the literature by demonstrating that the duration of nightmare problems may also be important in explaining suicide risk. This finding has implications for clinical practice, as clinicians have in the past been instructed not to use nightmare treatments, such as Imagery Rehearsal Therapy, with suicidal individuals due to concern that the nightmares may get worse before they get better (Talbot, 2009). However, the current study suggests that not treating the nightmares may also lead to increased suicide risk as duration was associated with higher scores on the SBQ-R. Therefore, research investigating strategies to treat nightmares in individuals with suicide risk may be warranted, so long as proper precautions are taken to protect the participants (e.g., establishing a safety plan, inpatient treatment, or frequent outpatient visits).

Limitations

There are several limitations of our study. First, the current study utilizes a college population, which limits the study's external validity. Nonetheless, it is an important population to study, as suicide is the third leading cause of death for college-age individuals (Centers for Disease Control & Prevention, 2012). Second, as the SBQ-R includes questions about lifetime suicidal ideation and behavior, it may be less sensitive than other measures to recent changes in suicide risk. However, the SBQ-R is a commonly used, validated measure of

suicide risk (Osman et al., 2001), and was sensitive enough to detect an effect in the current study. It may also be argued that the association between insomnia symptom duration, nightmare duration, and suicide risk may be inflated because all three are lifetime measures. However, the fact that current insomnia symptoms and nightmares are more strongly correlated with the SBQ-R than either insomnia symptom duration or nightmare duration suggests that the fact that they are lifetime measures does not inflate their relation to suicide risk. Third, the use of a cross-sectional design is a limitation of this study; however, to the best of our knowledge, the present study is the first to link sleep difficulty duration to suicide risk, which will hopefully lay the groundwork for prospective studies. The use of a one-item retrospective measure of insomnia and nightmare duration is a limitation as it does not provide a way for the authors to ensure the veracity of the duration reports. However, there are no validated measures of insomnia and nightmare duration in the literature. Further, although the use of a retrospective measure is a limitation, it allowed us to lay the groundwork for future exploration by establishing that there is a relation between duration of insomnia symptoms, nightmares, and suicide risk.

Overall, the findings from this study are an important first step, as the relations between insomnia symptom duration, nightmare duration, and suicide risk have not been examined previously. Thus, the current results provide an avenue for future work.

Future Directions

Based on the results of this study, several areas of future work are suggested. First, prospective research is needed to further examine the relation between insomnia and nightmare duration and suicide risk. Researchers may want to examine whether nightmare or insomnia symptom duration are associated with greater hopelessness or lower feelings of belongingness, as these variables may mediate the relation between insomnia symptom duration, nightmare duration, and suicide risk. Second, future studies should examine the relation between insomnia symptom duration, nightmare duration, and suicide risk in different age groups, especially those at higher risk, to determine whether these findings generalize beyond a college-age sample. Additionally, future research utilizing diagnoses instead of symptoms of disorders would be valuable to help determine whether insomnia symptoms and nightmares due to a psychiatric disorder differ from those due to the presence of a sleep disorder in relation to suicidal behavior. Finally, prospective or retrospective research examining insomnia symptom and nightmare duration in suicide decedents may increase the external validity of the current study beyond suicide risk.

Our finding that insomnia symptoms and nightmare duration were significantly associated with suicide risk independent of depressive symptoms, anxiety symptoms, and posttraumatic symptoms raise the question of whether treating sleep disorders may be important for reducing suicide risk in conjunction with other treatments. Research has found that adding cognitive behavioral therapy for insomnia to antidepressant treatment leads to higher rates of remission from depression (Manber et al., 2008). Similarly, sleep treatments, such as cognitive behavioral therapy for insomnia and imagery rehearsal therapy for nightmares, could be combined with other treatments designed to reduce suicide risk in individuals with both suicide risk and sleep difficulties. Based on our findings, research investigating the efficacy of adding sleep treatment to standard treatment for suicide risk would be very interesting.

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