



Nightmares: Under-Reported, Undetected, and Therefore Untreated

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Objective: Nightmares are a robust and modifiable predictor of increased suicidality and poor psychiatric outcomes, yet nightmare screening and treatment remain rare, even in sleep centers. This paper aims to examine what proportion of nightmare sufferers have discussed nightmares with a healthcare provider, as well as possible explanations for low rates of nightmare complaints.

Methods: The present study utilized a large United States community sample recruited through mTurk and a student sample recruited from a large public university in the Southeast United States. In Study 1, participants (n = 809) were asked whether they had discussed nightmares with a healthcare provider. In Study 2 participants (n = 747) were asked whether they believed nightmares were treatable in addition to whether or not they had discussed nightmares with a healthcare provider.

Results: Of the participants in Study 1 experiencing clinically significant nightmare symptoms only 37.8% of participants reported discussing their nightmares

with a healthcare professional. In Study 2 only 11.1% of participants with significant nightmares reporting having told a healthcare provider about their nightmares. Further, of these individuals with clinically significant nightmare symptoms, less than one-third believed that nightmares were treatable. Higher nightmare severity was associated with a greater likelihood of reporting nightmares to a healthcare physician as well as with lower beliefs that nightmares are treatable.

Conclusions: Our findings suggest that nightmares are rarely reported to healthcare providers, which may explain the underutilization of nightmare treatments. Given the poor outcomes associated with nightmares, nightmare screening is warranted.

Keywords: nightmare disorder, nightmare screening, nightmare treatment, underreporting

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Nightmares are vivid, disturbing, or frightening dreams that result in a startled awakening.¹ Although commonly thought of as a childhood disorder, nightmares can persist into adulthood, with 14% of college students reporting nightmares at least once per week.^{1,2} In addition to being a well-known symptom of posttraumatic stress disorder (PTSD), having nightmares before a trauma has been shown to increase one's risk of developing PTSD.^{3,4} Nightmares are also associated with insomnia symptoms, anxiety, depression, schizophrenia, and even suicidal thoughts and behaviors.^{2,5–8} Thus, nightmares are clinically relevant and are a primary target for intervention.

Several psychological and pharmacological treatments have been developed for nightmares, with two treatments having substantial empirical support: Imagery Rehearsal Therapy^{9,10} and prazosin.¹¹ However, anecdotal evidence suggests these are underutilized. To date, research has yet to examine which factors may prevent those with clinically significant nightmare symptoms from receiving treatment. This study examines the percentage of sufferers who report nightmares to a healthcare provider, and whether being unaware of treatments may prevent discussions with healthcare professionals.

BRIEF SUMMARY

Current Knowledge/Study Rationale: Despite being clinically relevant, it is often believed that nightmares are under-reported and under-treated. However, there are few studies that have assessed the proportion of nightmare sufferers who have discussed nightmares with a healthcare professional.

Study Impact: Our findings suggest that a low percentage of nightmare sufferers have discussed their nightmares with a healthcare professional, thus nightmares under-identified, which likely results in nightmare treatments being under-utilized. Given these results, nightmare sufferers are unlikely to self-identify and therefore nightmare screening is warranted.

METHODS

Participants and Procedure for Study 1

Participants consisted of 809 adults who were recruited as part of a larger study that comprised 12 surveys. Participants were recruited using Amazon's Mechanical Turk (mTurk), an online pool of workers used to recruit clinical samples from across the United States.¹² Thus, this sample contains above-average psychopathology scores and most closely generalizes

to a clinical sample.¹² Participants were initially recruited through mTurk, where they clicked a link that took them to our Qualtrics survey. Qualtrics is a survey management software much like Survey Monkey that was utilized to host the survey. The responses were collected anonymously through Qualtrics and were downloaded and de-identified by the research team. A total of 965 participants completed the study, and 156 were removed for insufficient response time (< 10 min, mean time = 26 min), or biased responding (e.g., failing to respond differently on reverse-coded items when compared to non-reverse coded items). The sample was predominately female (68%), with an age range of 18 to 75 years (mean age = 35.8, SD = 12.3). Approximately 80% of the sample identified as Caucasian, 6% African American, 6% Hispanic, 2% Asian Pacific Islander, 0.3% Native American, and 4.5% other. Participants who were screened out during data cleaning were significantly younger, and more likely to be male and identify as Asian or Pacific Islander. After completing the survey, participants were given \$0.25 compensation for completing the study. Both studies were approved by the institution's IRB, and all participants were shown a cover letter describing the study prior to participation, with participants being required to click a button indicate consent and to continue with the study.

Participants and Procedure for Study 2

Participants consisted of 747 undergraduate students from a large public university in the Southern United States, who were recruited as part of a larger study that comprised 12 surveys.¹³ Thus, the second sample most closely generalizes to the general population. A total of 812 participants completed the study, and 65 were removed for insufficient response time or biased responding (< 10 min, mean completion time = 32 min). The sample was predominately female (57%), with an age range of 18 to 33 years (mean age = 18.9, SD = 1.4). Approximately 74% of the sample identified as Caucasian, 21% African American, 3% other. Participants who were screened out during data cleaning were less likely to identify as Caucasian and more likely to identify as Asian or Pacific Islander. Participants were recruited using SONA Systems, which is an online research pool and survey management software. Our participant pool is composed of students taking Psychology courses (primarily General Psychology), and they received course credit or extra credit for their participation. Participants selecting our study shown a cover letter describing the study prior to participation, with participants being required to click a button indicate consent and to continue with the study.

Measures

The Disturbing Dreams and Nightmare Severity Index (DDNSI)¹⁴

The DDNSI, which is a revised version of the Nightmare Frequency Questionnaire is a measure of current nightmare and disturbing dream frequency and severity.¹⁵ It was used to identify participants with clinically significant nightmare symptoms. The DDNSI assesses the frequency, intensity, and severity of nightmares and bad dreams. The participant is asked about the frequency of nightmares (both number

of nights per week with a nightmare and total nightmares per week) as well as the severity and intensity of the nightmare problem utilizing a Likert-type scale ranging from no problem (0) to extremely severe problem/intensity (6). The measure also assesses how often nightmares result in awakenings ranging from never/rarely (0) to always (4). The index score is calculated by adding the number of nightmares per week (up to 14), number of nights with nightmares per week, and ratings of the severity of the nightmares, the intensity of the nightmares, and the frequency of nightmare-related awakenings. Prior research has found that a score > 10 is consistent with a nightmare disorder being present, and thus this cutoff was utilized in both studies to identify participants with clinically significant nightmare symptoms.¹⁴ In Study 1 the mean score was 6.67 (SD = 7.81) with acceptable internal consistency ($\alpha = 0.90$). Looking specifically at frequency and severity of nightmares, 13.7% reported never having nightmares, 27.4% reported yearly nightmares, 32.9% reported monthly nightmares, and 26% reported weekly nightmares. For severity and intensity, 24.2% reported that their nightmares were a severe problem to an extremely severe problem, and 45.4% reported that they were of severe intensity to extremely severe intensity. In Study 2 the mean score was 2.83 (SD = 4.54), with acceptable internal consistency ($\alpha = 0.87$). Looking specifically at frequency and severity of nightmares, 32.5% reported never having nightmares, 26.4% reported yearly nightmares, 29.0% reported monthly nightmares, and 11% reported weekly nightmares. Looking at severity and intensity, 4.8% reported that their nightmares were a severe problem to an extremely severe problem and 12.6% reported that they were of severe intensity to extremely severe intensity.

Discussion of Nightmares with a Healthcare Professional

In both studies, participants were asked whether they had ever reported nightmares to a healthcare professional, using the following question: "Have you ever discussed having nightmares with a physician or mental health professional?" They were provided a text box to answer. Any answer that indicated discussion with any healthcare professional were coded as having discussed nightmares with a healthcare professional (1; e.g., "yes, with my therapist" and "in a cursory manner"), whereas negative responses were coded as 0 (e.g., "I have not yet"). Missing or ambiguous responses were excluded from the analyses. Coding of responses was conducted by two PhD-level raters who had substantial coding experience in the past (MN and DN). The raters were highly reliable, with $\kappa = 1.00$ in study 1 and $\kappa = 0.995$ in study 2.

Belief that Nightmares Are Treatable

In Study 2, we also assessed whether participants believed that nightmares are treatable. Participants were presented with the question "Do you believe it is possible to treat nightmares?" and were provided a text box to answer. Responses that indicated *any* belief that nightmares were treatable (e.g., "possibly" or "there may be some treatments") were coded as 1, and negative beliefs were coded as 0. Missing or ambiguous responses were excluded from the analyses. Coding between two raters was highly reliable, with $\kappa = 0.977$.

RESULTS

Discussion of Nightmares with a Healthcare Professional

In Study 1, 201 individuals (24.9% of total sample) endorsed clinically significant nightmare symptoms, and 76 of those 201 (37.8%) reported discussing nightmares with a healthcare provider. The majority, ($n = 125$ or 62.2%) reported that they have not discussed nightmares with a healthcare provider. A logistic regression on the full sample revealed that individuals with more severe nightmare symptoms were more likely to discuss nightmares with a physician, $\beta = 0.31$, Wald's $\chi^2 = 30.31$, $p < 0.01$.

For Study 2, 54 individuals endorsed clinically significant nightmares (7.2%), and only 6 of those 54 (11.1%) reported discussing nightmares with a healthcare provider. Again, the majority of individuals with severe nightmares (48 or 88.9%) reported that they have not discussed nightmares with a healthcare provider. A logistic regression revealed that individuals with more severe nightmare symptoms were more likely to discuss nightmares with a physician, $\beta = 0.41$, Wald's $\chi^2 = 19.37$, $p < 0.01$.

Belief that Nightmares Are Treatable

In Study 2, we examined whether or not believing that nightmares are treatable may explain why so few individuals discuss nightmares with healthcare providers. Among those with clinically significant nightmare symptoms ($n = 54$; 7.2%), we found that 17 (32.7%) participants believed nightmares were treatable, whereas 35 (67.3%) reported they were not. A logistic regression using the full sample revealed that individuals with higher levels of nightmare symptoms were less likely to believe that nightmares were treatable ($\beta = -0.15$, Wald's $\chi^2 = 9.40$, $p < 0.01$). There was no relation between believing that nightmares are treatable and discussing nightmares with a healthcare professional ($\chi^2 = 0.95$, $p = 0.33$). Alternatively, the relationship between nightmare severity and discussing with a provider remained significant after adjusting for belief that the nightmares are treatable ($\beta = 0.42$, Wald's $\chi^2 = 19.86$, $p < 0.01$).

DISCUSSION

Our results indicate that most participants with clinically significant nightmare symptoms are unlikely to report nightmares to a healthcare provider. Although we did not directly assess whether these individuals were in treatment, we can infer that the majority of individuals with clinically significant nightmare symptoms are not pursuing or receiving nightmare treatment. Thus, the current study supports the anecdotal perception that nightmare treatments are underutilized.

As expected, increased nightmare severity was positively related to increased likelihood of discussing nightmares with a healthcare provider. Further, this effect remains significant after adjusting for the belief that nightmares are treatable. Thus, nightmare severity appears to be a more influential variable in predicting reporting nightmares to a healthcare provider than belief that nightmares are treatable.

Our study has a few notable limitations that warrant discussion. First, our coding rules were extremely liberal, which may have led to an overestimate of the number of participants

who have reported nightmares to a healthcare professional or who believe that nightmares are treatable. Thus, the fact that we found low rates of endorsement despite this liberal coding criteria is notable. Second, our measure of nightmares includes disturbing dreams, which some authors have argued are a separate phenomenon from nightmares. However, in their review of nightmares, Levin and Nielsen conceptualized both bad dreams and nightmares together in the same theory, because "it remains unknown whether they (nightmares and bad dreams) are two qualitatively distinct phenomena or a single phenomenon varying in intensity" ($p 84$).¹⁶ Further, there is no evidence that there are different treatment outcomes for bad dreams vs. nightmares. Lastly, as mentioned previously, we did not assess whether participants had been treated for nightmares in either sample, and thus we cannot conclusively state the proportion of nightmare sufferers that have received treatment. However, we believe it may be assumed that those individuals who have never discussed nightmares with a healthcare professional have not received treatment for their nightmares. Based upon this assumption, the results of our study suggest that the majority of individuals with clinically significant nightmares have not received nightmare treatment. However, the literature would benefit from future research that directly assesses this research question.

In both of our studies, more than 60% of nightmare sufferers had never discussed nightmares with a clinician, and therefore it may be assumed that they are going without adequate nightmare treatment. Given the clinical relevance of nightmares, the failure to identify and treat these individuals is clinically, financially, and societally significant. To improve the identification and treatment of nightmare disorder, training in assessing sleep disorders, especially for physicians and nurses, is warranted. Assessing the belief that nightmares are a treatable condition among healthcare providers, and providing education to healthcare professionals on recommended nightmare treatments, may also be needed to address the needs of patients.

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