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Correlates and Treatments of Nightmares in Adults

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Synopsis

Nightmares, distressing dreams that primarily arise from REM sleep, are prevalent among the general population and even more so among clinical populations. The frequency of nightmares and related nightmare distress are linked to both sleep disturbance and waking psychopathology. Based on the extant evidence, nightmares appear to be particularly relevant to posttraumatic stress disorder, and may even be implicated in its pathophysiology. Significant advances in treatment have occurred in recent years, with effective pharmacological and psychosocial interventions now available. Despite the progress that has been made, however, more consistent assessment methods and more rigorous study designs are needed to fully understand the causes and consequences of nightmares.

Keywords

Nightmares; sleep; posttraumatic stress disorder; pharmacology; cognitive-behavioral treatments

Introduction

In this chapter, the definition of nightmares and diagnostic features are first presented. A discussion on the prevalence and frequency of nightmares, and related methodological issues are then discussed. The potential etiological factors of nightmares, associated features, and available pharmacological and cognitive-behavioral treatment strategies are then reviewed.

Current diagnostic classifications define nightmares as frightening dreams that awaken the sleeper. However, fear is not the only emotion reported in nightmares, as the importance of the awakening criterion regarding functional and sleep impairments associated with nightmares has been debated in the literature. These points are briefly summarized here. However, the term is broadly used in this chapter to refer to disturbed dreaming that may or may not be accompanied by an awakening, and that is associated with clinically meaningful levels of daytime distress, functional impairments, and/or sleep disruption.

In reviewing available data on nightmare prevalence and frequency estimates, the needs for more unified methodological approaches and longitudinal designs in future studies are also highlighted. Although the literature is limited regarding the etiology of nightmares that occur outside the context of stress or traumatic responses, hypotheses previously suggested regarding the correlates and potential underlying mechanisms of nightmares are presented. Selected

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associated features of nightmares (i.e., psychopathology and sleep disturbances) are also presented. Finally, available and promising treatment strategies are described. Some pharmacological and cognitive-behavioral treatments of nightmares have been shown to effectively reduce and eliminate nightmares, but relatively few rigorous, randomized controlled clinical trials have been conducted. Future directions for methodological consideration, research investigations, and clinical practice are offered in conclusion.

Definition

The Diagnostic and Statistical Manual of Mental Disorders, 4th edition, text revision (DSM-IV-TR¹), and the International Classification of Sleep Disorders, 2nd edition (ICSD-II)², both converge on defining nightmares as *intensely disturbing dreams that awaken the dreamer to a fully conscious state and generally occur in the latter half of the sleep period*. However, these diagnostic classifications also differ on two key points. First, they differ on whether nightmare-associated emotions are limited to fear and anxiety (DSM-IV-TR) or can include all dysphoric emotions, such as anger or despair (ICSD-II). Second, only the DSM-IV-TR specifies a criterion that the nightmare or resulting sleep disturbance is associated with significant distress or impairment in waking functioning.

The expansion of nightmare-associated emotions beyond fear and anxiety is well recognized in the literature, although fear is to the most commonly reported emotion in nightmares³. In contrast, the absence of a distress criterion in the ICSD-II has been criticized on the basis of evidence that distress is more important than frequency in determining whether nightmares are associated with negative outcomes, including sleep disturbance, psychopathology, and/or health behavior problems⁴.

The awakening criterion has stimulated significant controversy in the field. Historically, distressing dreams that do not lead to an immediate awakening (at least one that is remembered by the dreamer) have been labeled bad dreams⁵. Theorists have suggested dreaming serves an extinction function, and that the awakenings associated with nightmares, but not bad dreams, disrupts this extinction process^{4, 6}. Consequently, many studies dichotomize nightmares and bad dreams as distinct phenomena. However, the evidence concerning the importance of awakening to associated distress or psychopathology remains mixed and raises questions about the clinical usefulness of this distinction. Specifically, available treatments to reduce unpleasant dreams usually focus on the extinction of distressing content, rather than on the extinction of these associated awakenings.

Some have argued that all dysphoric dreams fall on a continuum, with nightmares as more intense versions of the same basic phenomenon as bad dreams, while others support the view that the distinction between nightmares and bad dreams relates to underlying differences in the intensity of the emotional content⁷. However, a close look at findings from studies that have investigated differences between nightmares and bad dreams in terms of dream content intensity denotes small differences between the two phenomena. For example, Blagrove and Haywood⁸ reported that dreams judged to have caused awakenings were rated as more unpleasant (in line with nightmares as more intense versions of bad dreams). However, the statistically significant differences in emotion intensity ratings differed by less than 0.3 point on a 7-point scale. A similarly small difference was found in ratings of emotional intensity in nightmares compared to bad dreams (ratings differed by ~0.7 on a 9-point scale) was also reported by Zadra and colleagues.⁹ These small differences in dream intensity between nightmares and bad dreams suggest that dream intensity may not be a primary mechanism that distinguishes nightmares from bad dreams.

Another important aspect that has received minimal attention regarding the clinical significance of the awakening criterion in the definition of nightmares is the reliability of patients' memories

of nocturnal awakenings. It is possible that bad dreams lead to much shorter awakenings, leading to amnesia of the arousal. For instance, awakenings of less than three minutes in duration are often associated with retrograde and anterograde amnesia¹⁰. Blagrove and Haywood⁸ attempted to address this concern by assessing the dreamers' subjective certainty about whether their disturbing dreams woke them up, and found that participants were generally confident making this decision, and particularly so for very unpleasant dreams. Nevertheless, the lack of objective measures to accurately evaluate the duration of these awakenings makes it difficult to ascertain that bad dreams associated with an awakening are less subjected to memory biases.

As indicated above, there is also divergence between the diagnostic classifications regarding nightmare distress. Some have argued that nightmare-related *distress* is more clinically relevant than nightmare frequency to daytime functioning and psychopathology⁴. From this perspective, nightmares are viewed as a manifestation of the cross-state continuity of distress from waking to sleeping. In support of this assertion, distress is only weakly related to nightmare frequency¹¹, but may be more robustly associated than frequency with sleep disturbance¹² and measures of psychopathology^{13, 14}. However, assessments of nightmare distress are vastly underrepresented in the literature⁴, and limited to one validated scale, the Nightmare Distress Scale¹¹, which may potentially confound nightmare distress with nightmare frequency¹⁵. Again, longitudinal studies with reliable frequency and distress measures are necessary to fully evaluate the clinical significance of nightmare distress.

Finally, it is important to note that neither classification system includes a criterion regarding the duration of the nightmare problem, perhaps because the etiology of distressing nightmares is often undetermined, or because the clinical meaningfulness of duration of the nightmare problem has not yet been assessed empirically.

Nightmares should not be confused with other distressing nocturnal phenomena. Nightmares are most readily distinguished from other similarly distressing nocturnal events by the extent of a mental content, confusion of disorientation upon awakening, and whether the event is remembered the following morning. If sleep recordings are available, the sleep stage in which these distressing nocturnal episodes generally occur also differs. Finally, the particular treatments that are effective for each category of event also vary.

Sleep terrors are associated with intense autonomic arousal. They can begin with a piercing scream but are paradoxically associated with a difficulty in awakening the sleeper from the episode and a return to deep sleep following the episode¹⁶. In contrast, there is little confusion or disorientation upon awakenings from nightmares, and episodes are vividly recalled the following morning. For sleep terrors, recollections of the events the following morning are at best vague or fragmented descriptions of frightening images, if the sleeper has any recall of the event at all¹⁷. Whereas nightmares primarily originate in rapid-eye movement (REM) sleep, sleep terrors occur in non-REM sleep, specifically the slow-wave sleep (SWS) of stages 3 and 4.

In contrast to nightmares and sleep terrors, nocturnal panic attacks often occur in the first few hours of the night during the transition from light (stage 2 sleep) to deep (stage 3) sleep. Intense arousal is inherent to nocturnal panic attacks, leading to abrupt and complete awakening from sleep in a state of panic without an obvious trigger and usually without screaming, and the panic attacks are associated with a difficulty in returning to sleep¹⁸. Complicating differential diagnosis is the co-occurrence that has been documented between these parasomnias, such as an association between monthly nightmares and an increased incidence of night terrors¹⁹. Finally, while sleep terrors and nocturnal panic attacks share a common predisposing condition—sleep deprivation leads to an increased incidence of both^{18, 19}—the existing evidence

suggests that nightmares lead to sleep disturbance rather than vice versa (see *Association with sleep disturbance* below).

Prevalence and frequency

Nightmares are most prevalent during childhood and young adulthood and decline thereafter⁴. However, prevalence estimates in the general population in all age ranges vary, and overlap substantially. From childhood through early adolescence, between 5 and 50% of children have nightmares with the prevalence of nightmare “problems” generally falling into the 20–40% range. In comparison, up to 85% of adults report at least one nightmare within the past year, 8–29% report monthly nightmares, and 2–6% report weekly nightmares^{20–22}. The latter estimates of weekly prevalence of nightmares have proved consistent across cultures^{12, 21–23}. Similarly robust are findings of a lower prevalence of nightmares among the elderly, with older adults reporting at levels 20–50% of that of young adults^{24–26}.

The variability in estimates is due in part to differences in the criteria employed, the definition of nightmares, the time frame of assessments, and emphasis on distress, or nightmares as a “problem” across studies, and the type of informants (e.g., patients, primary care physicians, parents). In studies of children, the information is generally gathered from mothers and thus, may underestimate the prevalence of nightmares, and may be confounded by the occurrence of other parasomnias that are common in childhood, such as sleep terrors. Of note, nightmare prevalence estimates are derived nearly entirely from cross-sectional data.

Sex differences in nightmare prevalence, with a higher percentage of women reporting nightmares, are one of the most consistent findings in the nightmare literature²⁷, although unacknowledged exceptions do exist²⁸. Researchers have offered a variety of non-mutually exclusive explanations for this difference, including self-report biases in women, greater vulnerability to risk factors including abuse, as well as anxiety and mood disorders for women, sex differences in coping styles, and biological differences in emotion processing^{4, 11, 29–31}. Together, these aforementioned findings highlight the need for conducting longitudinal studies using established diagnostic definitions, an important future step to establishing prevalence rates over the lifespan. Longitudinal studies would also provide novel information on the potential modulators (e.g., sex, coping styles, biological factors) that may contribute to enhanced vulnerability or resilience to chronic nightmares. Although the developmental trajectory remains to be clarified, all estimates to date indicate that nightmares are a relatively prevalent problem, underscoring the need for appropriate clinical identification, assessment, and treatment.

Data concerning the frequency of nightmares is also characterized by substantial variability, mostly due to differences in assessment methods employed across studies. Common methods to assess nightmare frequency consist of retrospective estimates of the number of nightmares that occurred over a predetermined period of time (usually one month to one year), or prospective nightmare logs. Nightmare logs refer to daily dream/nightmare logs completed upon awakening in the morning, and can consist of a simple checklist or a more extensive dream diary used to record nightmare narratives. A number of studies have assessed nightmare frequency using retrospective or prospective measures. The differences between retrospective and prospective methods impact frequency estimates. Specifically, retrospective estimates have yielded frequency estimates ranging from less than once per year to once per month, ^{28 for review}, whereas prospective measures have consistently provided higher nightmare frequency estimates, particularly when compared to 1-year retrospective nightmare frequency measures²⁸. Studies that have compared both assessment methods reported that retrospective questionnaires underestimate nightmare frequency by a factor of 2.5 to 10^{7, 13, 32}. Of note, many of these studies have been conducted with undergraduate samples, who are in their first

semester of college, a time of social and emotional upheaval for many. The latter may provide overestimates of nightmare frequency in non-college populations. Differences in frequency estimates derived from retrospective and prospective measures are generally interpreted indicating that retrospective measures *underestimate* nightmare prevalence. However, monitoring of nightmares could potentially increase or decrease their frequency. Nevertheless, prospective nightmare measures have been recommended as the gold standard.^{4, 28}

The most sophisticated study on the topic evaluated the comparability of frequency estimates for nightmares and bad dreams when assessed by 1-year and 1-month retrospective measures, as well as both narrative and checklist prospective measures. Including the two types prospective measures was intended to address the question of whether intensive monitoring (per the narrative logs) results in higher frequencies than a less demanding approach (the checklist logs). In contrast to predictions, the narrative logs produced *lower* nightmare frequency estimates compared to checklist logs that did not significantly differ from the 1-month retrospective measure, and possibly *higher* than the 1-year retrospective measure. When examining bad dreams, both prospective measures produced higher estimates than the retrospective measures, but the prospective and retrospective estimates for bad dreams were not significantly different from one another.

Attempts to assess nightmares via polysomnographic (PSG) recordings in the laboratory have been difficult, as nightmares tend to occur less under these conditions³³. Even posttraumatic nightmares (see Etiology below) have a low incidence (1–10% versus up to 85% of nights) in the sleep laboratory relative to naturalistic conditions^{34, 35}. Intriguingly, a recent pilot study using ambulatory PSG recording suggested that the presence of the PSG rather than the setting is the crucial factor in the lower observed frequency. In a sample of twelve inpatients in a psychiatric clinic, Spoomaker and colleagues (unpublished data reported in¹⁵) found a significantly lower nightmare incidence (8% versus 34.5%) using ambulatory PSG over two 24-hour recordings compared to daily logs over seven days. However, the generalizability of this study outside of inpatient settings is uncertain, and PSG studies of nightmares remain too few to draw firm conclusions.

Etiology

Nightmares are associated with a range of psychiatric symptoms, full-blown psychiatric disorders such as posttraumatic stress disorder (PTSD), and sleep disturbances. While some psychiatric, personality, sleep and biological correlates of nightmares have been described, the vast majority of extant studies are cross-sectional, precluding conclusive determination of causality and etiology. While longitudinal studies are awaited, findings suggesting that traumatic events, waking psychological distress, or sleep disturbance may contribute to the onset and maintenance of nightmares are presented in this section. Some theories that have been offered on the etiology of nightmares are briefly summarized below.

Idiopathic versus posttraumatic nightmares

An important etiological distinction made to date is the difference between idiopathic and posttraumatic nightmares. Idiopathic nightmares refer to nightmares with unknown etiology, and unrelated to a specific traumatic event or PTSD. Posttraumatic nightmares refer to dreaming disturbances that are part of the stress reaction following exposure to a traumatic event, either during the acute stress response, or over the course of posttraumatic stress disorder (PTSD). Nightmares are a core feature of PTSD, with up to 90% of individuals with PTSD reporting disturbing dreams with some degree of resemblance to the actual traumatic event. Nightmares may occur as frequently as six nights a week in individuals with PTSD³⁶, and may continue to occur up to 40–50 years after the original trauma^{37, 38}.

The distinction between idiopathic and posttraumatic nightmares has not been firmly established in most of the nightmare literature available to date. Given the emerging evidence that persistent nightmares in the wake of a traumatic incident predict later posttraumatic symptoms³⁹, making a differential diagnosis may be particularly important for early intervention to ward off PTSD. In addition, these two types of nightmares may differ in their associated sleep disturbance (see Associated Features), as well as the timing of their occurrence during the sleep period. Further research is necessary to characterize fully the etiology, phenomenology, trajectory, and functional consequences of these ostensibly different categories of nightmares.

Nightmares due to thin psychological boundaries?

Hartmann^{40, 41} proposed the constructs of “thin” and “thick” psychological boundaries to characterize chronic (idiopathic) nightmare sufferers and individuals who experience no or few nightmares, respectively. Frequent nightmare sufferers tend to be more emotionally sensitive, open, and reactive to elements of their internal and external environments. Individuals with no nightmares, on the other hand, tend to be less reactive to internal and external influences. Several subsequent studies have reported positive findings on the relationship between clinical features of schizophrenia-spectrum disorders and nightmare frequency^{42, 43}.

Disturbance in a generally adaptive process?

A prevailing assumption is that dreaming is adaptive⁴⁴, and thus nightmares may constitute an anomaly in the adaptive process, also described as “a failed dream”⁴⁴. However, the evidence in support of this hypothesis is scant. Rather, Flanagan⁴⁵ suggested that sleeping, not dreaming *per se*, is an adaptive process. In contrast, it has also been suggested that nightmares themselves might be the adaptive process. For example, Picchioni and colleagues⁴⁶ reported that nightmares are positively associated with waking attempts to cope with stress, suggesting that nightmares may serve a beneficial function. However, the absence of a direct assessment of successful outcome of coping in this study makes it difficult, at best, to relate nightmares to functional outcomes. The potential specific roles of nightmares in the adapting to waking stressors, and the specific conditions and mechanisms that contribute to successful or unsuccessful adaptation to stress through dreaming disturbances remain to be investigated.

Genetic predisposition to nightmares?

A single study has investigated the possible genetic contributions to nightmares. Using the Finnish Twin Cohort, a nationwide questionnaire study that included 1,298 monozygotic and 2,419 dizygotic twin pairs aged 33–60, Hublin and colleagues⁴⁷ found a genetic influence on nightmares that differed slightly between childhood and adult nightmares. Genetic effects accounted for an estimated 45% of the phenotypic variance in childhood, and for an estimated 37% in adulthood. Odds ratios for associated psychiatric disorders also varied by age group, with the children most frequently experiencing nightmares 3.67 times more likely to have a psychiatric disorder than those who never experienced nightmares, while adults with frequent nightmares had an odds ratio of 5.87. This suggests that nightmares during adulthood have a strong association with psychopathology. Again, these findings highlight the need for longitudinal studies to rigorously assess the moderators and predictors of the trajectory of nightmares and their clinical outcomes over time.

Associated features

Nightmares are associated with sleep disturbance, but longitudinal studies are required to ascertain the directionality of this association. Sleep disruption as a consequence of nightmares is implicit in their definition, given the criterion of awakening to a fully conscious state. Empirical data bear this out, as frequent nightmares are associated with increased reports of

sleep-onset and sleep-maintenance insomnia, more frequent nocturnal awakenings, and worse sleep quality^{22, 27, 48}. Breathing problems (e.g., asthma) and snoring are linked to idiopathic nightmares⁴⁹, while an association with full-blown sleep apnea has been reported in posttraumatic nightmares⁵⁰. Although longitudinal data are limited, one recent prospective study found that posttraumatic nightmares occurring at 3 months after a motor vehicle accident were not only associated with current sleep onset and sleep maintenance problems, but also predicted sleep maintenance difficulties at 1 year⁵¹.

Objective indices of sleep disruption as measured by PSG suggest that idiopathic and posttraumatic nightmares have been associated with differential impacts on sleep. Although both nightmare types share an association with elevated numbers of periodic limb movements, posttraumatic nightmares are related to more frequent, longer awakenings⁵², possibly as a consequence of a lowered arousal threshold during sleep in PTSD⁵³, although the evidence on this is mixed⁵⁴. In addition, posttraumatic nightmares may occur earlier in the night than idiopathic nightmares⁵⁵, but this was not replicated in a recent study⁵². Individuals with idiopathic and posttraumatic nightmares also did not differ on total sleeping time, sleep onset latency, slow-wave sleep, number of micro-arousals, or any of several REM-related parameters⁵².

Waking disturbance and psychopathology

Perhaps most relevant to clinical discussions of nightmares is their relationship to waking disturbance and/or psychopathology. In general, nightmares appear to be linked to a greater degree of mental complaints in both healthy and clinical populations.

An important part of the nightmare literature has focused on the relationships between personality traits and nightmare frequency. The association between nightmares and anxiety has been most widely investigated. Modest associations between different measures of trait and state anxiety (e.g., death anxiety scales, ego strength scales, manifest anxiety scales, and nightmare frequency assessed retrospectively) have been reported^{7, 32, 56–61}. However, the association between nightmare frequency and anxiety is weakened when assessed with daily nightmare logs compared to retrospective questionnaires^{7, 32}. Nightmare-related distress, rather than nightmare frequency, seems to be more strongly related to anxiety^{13, 14, 32}. In general, studies have consistently reported mild to moderate correlations between general symptoms of anxiety, mood, somatization, and hostility and nightmare frequency and distress^{7, 13}.

As mentioned previously, nightmares are a core feature of PTSD, and may be implicated in the pathophysiology of the disorder. In addition, a pre-trauma history of nightmares (possibly idiopathic nightmares) predicts the severity of PTSD⁶². PTSD-related nightmares are often resistant to first-line PTSD treatments, but respond well to pharmacological and cognitive-behavioral treatments (see section below).

Nightmares have also been linked to suicidality. Cross-sectional studies have not only demonstrated an association between nightmares and suicidal ideation^{63, 64}, but also with actual suicide attempts⁶⁴, and nightmares were the only sleep variable associated with suicidality in a sample of suicide attempters after controlling for Axis I disorders (including PTSD) and symptom intensity⁶⁵. One prospective study found that nightmare frequency, per 1-month retrospective self-reports, was related to the risk of suicide, with a 57% higher risk among those reporting “occasional” nightmares and a 105% higher risk among those reporting “frequent” nightmares⁶⁶. Notably, although all of these studies statistically controlled for possible confounding factors as sex, depression, and insomnia, only one study controlled for PTSD⁶⁵. This is an important limitation because PTSD is also linked to suicidality⁶⁷.

Treatments

The vast majority of the available pharmacological and psychological literature on the treatments of nightmares is derived from case reports and clinical trials targeting nightmares occurring in the context of PTSD⁶⁸ for review. Although very few studies have evaluated the effects of these treatments on nightmares of unspecified etiologies, there is little evidence suggesting that different outcomes would be observed.

Pharmacological treatments of nightmares

By far, the most common treatments of nightmares involve pharmacotherapy. There have been numerous open-label trials, with a variety of agents for the treatment of nightmares. To date, the most effective of available treatments of PTSD-related nightmares is prazosin. Prazosin is an alpha-1 noradrenergic antagonist, used nightly and associated with clinically meaningful improvements in nightmares, accompanied with reductions in other sleep disturbances and daytime PTSD symptoms. Placebo-controlled studies of prazosin have consistently reported positive effects on nightmares, in both military and civilians samples^{69–74}. However, nightmares recur with prazosin discontinuation.

Several other pharmacological approaches have also been used with mixed results. Tricyclic antidepressants and monoamine oxidase inhibitors were among the first agents tested for nightmares because of the suppressant effects on REM sleep, but side-effects and contraindications limit their clinical use. Selective serotonin reuptake inhibitors (SSRIs), such as paroxetine, sertraline, and fluoxetine, are FDA-approved as first-line recommended PTSD treatments, but their efficacy for nightmares is inconsistent across clinical trials. Trazodone and nefazodone, two serotonin-potentiating non-SSRI agents, have been associated with moderate to large beneficial effects on nightmares in open-label and controlled trials^{75–78}.

Cyproheptadine, an antihistamine with serotonin receptor antagonist properties, has not been found effective for reducing PTSD-related nightmares in a randomized controlled study^{79, 80}. Similarly, guanfacine, an alpha-2 adrenergic receptor agonist, was not found effective for reducing nightmares in patients with PTSD in two randomized controlled trials^{81, 82}.

Benzodiazepines are often prescribed to patients with PTSD, possibly as agents to manage sleep disturbances^{83–85}, despite lack of evidence as to their effectiveness. Two randomized controlled trials found no support for the efficacy of benzodiazepines for the treatment for nightmares in PTSD^{86, 87}. While benzodiazepines can reduce nightmares associated with REM sleep behavior disorder⁸⁸, their efficacy in alleviating nightmares from other etiologies is unknown. Atypical antipsychotic drugs have also been tested in the treatment of PTSD-related nightmares in military veterans with PTSD. Studies conducted with respirodone, olanzapine and quetiapine have yielded mixed results^{89–91}. Zolpidem (nonbenzodiazepine imidazopyridine;⁹²), gabapentin⁹³, and mirtazapine⁹⁴ show some promise, but await more rigorous evaluation.

Cognitive-behavioral treatments of nightmares

Cognitive behavioral treatments of nightmares have focused on two general approaches. The first approach is derived from the literature and treatment methods for anxiety disorders. Specifically, desensitization is implemented with the use of repeated exposure to the fearful nightmare content and habituation to the emotional response triggered by nightmare imagery. Three controlled studies^{95–97} have assessed the efficacy of desensitization in reducing nightmare frequency, nightmare intensity, psychological symptoms (e.g., anxiety, fear, depression, hostility, and general psychological distress), and sleep complaints. Although desensitization studies did not specify the etiology of nightmares in patients enrolled in these

trials, all have consistently reported improvements in nightmares, and also reported improvements in sleep disturbances and daytime symptoms of anxiety⁹⁷. Of note, desensitization studies that used nightmare recording or relaxation⁹⁵ as control treatment conditions also noted improvements in nightmares post-treatment. Improvements in nightmares were also found over the periods of follow-up assessments for patients randomized to the desensitization groups, which ranged from one to seven months post-treatment. Together, these studies suggest that desensitization can be an effective treatment for nightmares. The efficacy of desensitization for PTSD nightmares, however, has not yet been evaluated.

The second behavioral approach for the treatment of nightmares is imagery rehearsal therapy (IRT) and its variants. The goal of IRT is to decrease the frequency and/or intensity of nightmares by repeatedly rehearsing (practicing) new dream scenarios during wakefulness, and revising compensatory cognitions and behaviors that perpetuate nightmares. In comparison to desensitization, IRT does not involve exposure to distressing material. Rather, IRT emphasizes rescripting the original nightmare scenarios into new, non-distressing dream scenarios that are then mentally rehearsed several times per day. Exposure to the original nightmare scenarios is discouraged and repeated sessions of mental rehearsal of new dream scenarios are implemented, daily, one to three times per day. Generally, the instructions on how to create new dream scenarios are minimal. Patients may choose to alter the ending of the dream, to change specific elements of the original content (e.g., characters, nature of interpersonal and social interactions), or to create an entirely new dream scenario.

A series of controlled studies showed that rescripting and mentally rehearsing new dream scenarios alone, with limited to no exposure to the distressing dream content or intense emotional reactions, can significantly alleviate idiopathic nightmares and PTSD-related nightmares in patients reporting at least one nightmare per week⁹⁸, and sleep complaints^{48, 99}. A large controlled trial with sexual assault survivors with trauma-related nightmares replicated these findings by showing clinically meaningful improvements in nightmare frequency, reduced severity of daytime PTSD symptoms, and improved sleep quality compared to women assigned to a wait-list control group¹⁰⁰.

A variant of IRT, called Exposure, Relaxation, and Rescripting Therapy (ERRT; ¹⁰¹), has also been associated with long-term improvements in nightmare frequency, depression symptom severity, PTSD symptom severity and sleep quality for trauma-related nightmares, compared to effects observed in a wait-list control group. ERRT is a combination of education about trauma, PTSD, and sleep, exposure to the nightmare content and distressing themes; diaphragmatic breathing and daily progressive muscle relaxation, and rescripting of the nightmare scenario guided by the therapists and other members of the treatment group. Contrary to IRT, ERRT encourages exposure to the distressing nightmare content. Future research is awaited to determine how much exposure should be emphasized in the treatment of nightmares, and for which patients.

To date, IRT has shown efficacy with PTSD and non-PTSD related nightmares^{98, 99, 102, 103}, in civilians and military samples^{100,104}. However, more stringent control treatment conditions, as well as direct comparisons between desensitization/exposure and IRT approaches, are required to fully evaluate and compare the efficacy of different cognitive-behavioral techniques for the treatment of nightmares.

Other psychological approaches have also been used in the treatment of nightmares. For instance, positive case reports and case series are available in the literature for lucid dreaming¹⁰⁵, hypnosis¹⁰⁶, eye movement desensitization and reprocessing (EMDR)¹⁰⁷, and psychodynamic therapy^{108–110}. These approaches await controlled clinical trials to determine

efficacy for nightmares, and related impact of sleep disturbances and daytime functional impairments and distress.

Conclusion

Nightmares, a common occasional experience for a majority of the general population, are even more prevalent and frequent among clinical populations. This increased prevalence is consistent with converging evidence of their potential clinical significance across diagnostic categories. Not only does accumulating evidence link nightmares to waking distress and psychopathology, but prospective studies suggest that nightmares may be a risk factor for PTSD and increased suicidality, offering new venues for prevention and interventions.

Methodological limitations and differences across studies to date preclude a more complete understanding of many aspects of this fascinating phenomenon. Thus, more rigorous methods are needed to address a number of areas. First, the variability in assessment methods may have lead to imprecise prevalence estimates, and limits our ability to compare findings across studies. While studies of nightmares under controlled laboratory conditions may provide novel insights into the psychophysiological correlates of these nocturnal events, multi-night designs with larger samples studied under ecologically valid conditions are required to accurately evaluate the frequency and prevalence of nightmares in the general population and in clinical samples. Such studies would also permit assessments of the relationships between nightmare distress and frequency. Second, many questions remain regarding the etiology and outcomes of nightmares. The vast majority of the findings concerning nightmares and waking function are limited to correlations based on cross-sectional observational data. Both experimental and longitudinal designs will be required to address questions around the relationships between nightmares, sleep disturbance, and psychopathology. Even in the case of posttraumatic nightmares, where a clear event precedes the onset of nightmares, little is known about the biopsychosocial pathways through which the trauma exposure affects dreaming. More randomized controlled studies are also necessary to evaluate and compare available and promising treatment strategies, and to establish guidelines and algorithms to guide clinicians in the treatment of nightmares. Of note, effective nightmare treatments can be used as probes to test specific hypotheses regarding the psychophysiological mechanisms underlying nightmares.

In conclusion, it is noteworthy that a relatively small contingent of highly dedicated scientists is responsible for the laudable advancements in the nightmare literature to date. These researchers have also a posited some compelling hypotheses that deserve more rigorous testing. Opportunities for novel contributions to and advancement of this important area of clinical investigation await the efforts of the broader research community.

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