

A retrospective study on improvements in nightmares and post-traumatic stress disorder following treatment for co-morbid sleep-disordered breathing[☆]

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Abstract

Objective: To assess the impact of treatment for co-morbid sleep-disordered breathing (SDB) on patients with nightmares and post-traumatic stress. **Methods:** Twenty-three chronic nightmare sufferers (15 with post-traumatic stress disorder, PTSD) who also suffered co-morbid SDB (obstructive sleep apnea, OSA, $n = 16$; upper airway resistance syndrome, UARS, $n = 7$) completed a telephone interview, on average, 21 months after having been offered treatment for SDB at a university sleep disorders clinic. **Results:** At follow-up, 14 reported maintaining treatment (Treatment Group) and 9 reported discontinuing treatment (No-Treatment Group). More patients in the Treatment Group reported improvement in sleep (93% vs. 33%) and in

daytime well being (93% vs. 33%) compared with those in the No-Treatment group. The Treatment Group reported a median improvement in nightmares of 85% compared with a median 10% worsening in the No-Treatment Group. In the PTSD subset ($n = 15$), nine in the Treatment Group reported a median 75% improvement in PTSD symptoms whereas six in the No-Treatment Group reported a median 43% worsening. **Conclusion:** In this small sample of patients, treatment of SDB was associated with improvements in nightmares and PTSD. Relationships between nightmares, PTSD and SDB are discussed. © 2000 Elsevier Science Inc. All rights reserved.

Keywords: Nightmares; PTSD; Obstructive sleep apnea; Upper airway resistance syndrome

Introduction

In community samples, prevalence of post-traumatic stress disorder (PTSD) ranges from 8% to 9% [1,2], and for chronic nightmares, from 6.9% to 8.1% [3,4]. Although these disorders are viewed as mental health problems, it is noteworthy that they are listed in both the Diagnostic and

Statistical Manual of Mental Disorders (1994) [5] and in the International Classification of Sleep Disorders (1991) [6]. Nonetheless, the relatively sparse treatment literature on PTSD has focused on psychological, psychiatric and psycho-pharmacological evaluations and management [7–10] with minimal attention paid to sleep complaints. Randomized, controlled treatment studies of PTSD have demonstrated moderate to large therapeutic effects with medications, systematic desensitization, flooding and stress inoculation training [7], but no interventions have primarily targeted sleep complaints. Limited nightmare treatment research describes cognitive-behavioral approaches, psychodynamic and dream interpretation modalities [11].

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Randomized, controlled treatment studies of nightmares have demonstrated therapeutic effects for two cognitive-behavioral approaches: desensitization and imagery rehearsal [12–16], and sustained improvements with imagery rehearsal [17,18], including self-reported improvements in sleep quality. A preliminary report demonstrated efficacy for imagery rehearsal in the treatment of nightmares in sexual assault survivors with PTSD [19]. In sum, while treatment literature on nightmares and PTSD offers useful insights, the fields are still emerging [9].

In an effort to broaden this field, Katz et al. [10] concluded that PTSD “research done thus far is suggestive of a densely interconnected psycho-biological balancing act”; yet, to our knowledge, there is minimal research that has addressed this perspective [20,21]. Sleep—a nearly universal psycho-biological behavior—and specifically, intrinsic sleep disorders evaluations, are notably absent in nightmare and PTSD treatment literature despite the predominance of insomnia complaints in these populations [22,23]. The paucity of sleep research is puzzling given the pronounced overlap between sleep disorders and psychiatric illness [24–26]. Further, preliminary research indicates a potential for co-morbid intrinsic sleep disorders, such as sleep-disordered breathing (SDB) and sleep-related movement disorders, in a proportion of PTSD and nightmare patients [27–31]. The two most common types of SDB are obstructive sleep apnea (OSA) and upper airway resistance syndrome (UARS). Both OSA and UARS produce a final common pathway of multiple awakenings or micro-arousals from sleep, secondary to the breathing disturbance; this causes sleep fragmentation, poor sleep quality and subjective complaints of daytime fatigue and sleepiness [32].

There is no published study that has established the prevalence for SDB in patients with nightmares or PTSD. However, in a recent subjective study, 81 of 156 sexual assault survivors with nightmares, insomnia and PTSD endorsed key symptoms consistent with a sleep breathing disorder [31], as defined by clinical algorithm [33]. A potential relationship between SDB, trauma and dreams is also suggested by the case of a Vietnam veteran with a 20-year history of nightmares and PTSD, which following diagnosis of co-morbid sleep apnea, resolved with continuous positive airway pressure (CPAP) [34] (CPAP pneumatically splints the airway to normalize airflow [35]). Both PTSD and nightmares remained in remission at 4 months follow-up [34]. Further, recent unpublished observations [36,37] have demonstrated a prevalence of *objectively diagnosed* SDB (primarily UARS) greater than 75% in consecutive series of 20 [36] and 44 [37] crime victims who had enrolled in a research program to treat nightmares and insomnia.

To further explore the potential relationship between nightmares, PTSD and SDB, we studied 23 patients with chronic nightmare disorder (15 with PTSD) who presented to a University sleep clinic. All were subsequently diag-

nosed with SDB by polysomnography (overnight sleep studies), then offered CPAP or other treatments. The purpose of the study was to provide pilot data on the impact of treatment (for SDB) on nightmares and PTSD in order to explore the usefulness of more extensive investigations in this area. We hypothesized that individuals who successfully treated their SDB would report the following changes: (a) sleeping better, (b) feeling better during the daytime, (c) improvement in nightmares, and, (d) in those with PTSD, improvement in PTSD symptoms.

Methods

Participants

The study was approved by the Human Research and Review Committee of the University of New Mexico Health Sciences Center. All patients provided written and oral consent for treatment at the University Hospital Sleep Disorders Center as part of a routine clinical evaluation. Clinic charts for the period 1994–1998 were searched for patients with a chronic nightmare disorder, diagnosed at intake using standard criteria: (a) nightmare frequency \geq once/week, (b) minimum duration of 6 months, (c) self-report of psychosocial impairment secondary to disturbing dreams, and (d) no other medical or medication-induced cause for the disturbance [5,6]. Forty-four patients were noted; these charts were reviewed to determine the presence or absence of co-morbid OSA or UARS. Thirty-eight patients met inclusion criteria (SDB and chronic nightmare disorder). Telephone contact was attempted for all patients: 23 (61%) participated.

Procedures and measures

Clinical and laboratory records of participants and non-participants were reviewed to extract demographic information on age, gender, and ethnicity, and to gather data on body-mass index (BMI), SDB diagnosis (OSA or UARS), time interval from diagnosis, apnea-hypopnea index, oxygen nadir, presence or absence of PTSD, nature of traumatic exposure and baseline psychotropic medications. Presenting symptoms were culled from the intake history and physical exam, conducted by board-certified sleep disorders specialists, and from a sleep history questionnaire completed prior to intake.

SDB had been diagnosed in all patients with full polysomnography using standard criteria for OSA, based on an apnea-hypopnea indices greater than 10 events per hour [32]. UARS diagnoses were determined with the following criteria: (a) pervasive airflow irregularities that did not meet standard criteria for hypopneas; and, (b) excessive EEG micro-arousal activity, not otherwise explained by periodic limb movement disorder, medication side-effect, bruxism, or another intrinsic sleep disorder; or, (c) the presence of

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