

# REM SLEEP BEHAVIOR DISORDER IN PATIENTS WITH POST TRAUMATIC STRESS DISORDER

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## Introduction

The number of forcibly displaced people in the world is surging with 108.4 million people currently displaced<sup>1</sup>. The prevalence of post-traumatic stress disorder (PTSD) has recently been estimated to be 31% in refugees, and sleep impairment is considered a hallmark of PTSD<sup>2,3,4</sup>. Rapid eye movement (REM) Sleep Behavior Disorder (RBD) has emerged as an interesting area of investigation in the context of sleep in PTSD<sup>5,6</sup>. By performing secondary analyses on data from a large randomized controlled trial (RCT)<sup>7</sup> and a smaller proof-of-concept (POC) polysomnography (PSG) study<sup>8</sup>, we aimed to investigate the association between PTSD and RBD symptoms in relation to sleep disturbances, level of functioning, and treatment outcome.

## Method

We included data from an RCT of 219 trauma-affected refugees comparing four different treatment groups and a POC study of 20 patients assessing objective sleep parameters. A diagnosis of probable-RBD (pRBD) was conservatively defined using the REM Sleep Behavior Disorder Questionnaire (RBDSQ). In the patient population of 219 patients, six validated questionnaires, including the Pittsburgh Sleep Quality Index (PSQI) and Disturbing Dream and Nightmare Severity Index (DDNSI) were administered at baseline and follow-up. From the study population of 20 PTSD patients, we included PSG measurements and analyzed these by automated scoring methods assessing several sleep parameters, including REM Sleep Without Atonia (RSWA). Statistical analyses included Chi-squared tests, Wilcoxon-Mann-Whitney tests, and OLS regression models.

## Results

RBD symptoms were common with 58.5% of 239 patients meeting criteria for pRBD. PTSD patients with pRBD had a significantly higher prevalence of weekly nightmares and were significantly more disturbed by these as measured by DDNSI. pRBD was associated with a worse treatment outcome assessed by PSQI. PSG data revealed no findings of RSWA but a significant association between pRBD and longer wake after sleep onset and decreased percentage of N3 sleep, indicating poorer sleep in the pRBD group.

Weekly nightmares and DDNSI-score at baseline

|                          | pRBD     |          | nRBD     |          | p-value  |          |                |
|--------------------------|----------|----------|----------|----------|----------|----------|----------------|
|                          | n        | %        | n        | %        |          |          |                |
| <b>Weekly nightmares</b> |          |          |          |          |          |          |                |
| Yes                      | 85       | 68.0     | 25       | 49.0     | 0.0087   |          |                |
| No                       | 11       | 8.8      | 11       | 21.6     |          |          |                |
| Missing                  | 29       | 23.2     | 15       | 29.4     |          |          |                |
| <b>Score</b>             | <b>n</b> | <b>μ</b> | <b>σ</b> | <b>n</b> | <b>μ</b> | <b>σ</b> | <b>p-value</b> |
| <b>DDNSI</b>             | 120      | 30.3     | 6.6      | 50       | 23.8     | 9.7      | 0.0000         |

Estimates for change in PSQI-score

| Variable  | Estimate | SE   | p-value |
|-----------|----------|------|---------|
| Intercept | -7.16    | 2.12 | 0.0010  |
| Male      | 0.22     | 0.75 | 0.7741  |
| Age       | 0.09     | 0.04 | 0.0318  |
| pRBD      | 1.76     | 0.82 | 0.0350  |

Sleep Characteristics of Patients with pRBD in comparison to PTSD with nRBD

| PSG parameters                |       | PTSD nRBD    | PTSD pRBD    | p-value |
|-------------------------------|-------|--------------|--------------|---------|
|                               | n     | 8            | 12           |         |
| <b>Wake after sleep onset</b> | μ ± σ | 33.3 ± 36.4  | 115.9 ± 83.6 | 0.0121  |
| <b>N3 %</b>                   | μ ± σ | 23.8 ± 14.5  | 11.4 ± 8.67  | 0.0372  |
| <b>Arousal EMG-amplitude</b>  | μ ± σ | 1.17 ± 0.337 | 1.81 ± 0.545 | 0.0164  |

RSWAI: REM Sleep Without Atonia Index. HRV: Heart Rate Variability. EMG : electromyography

## Conclusion

Our study revealed a high prevalence of RBD symptoms among trauma-affected refugees diagnosed with PTSD. As a novel finding, we observed a significant correlation between the presence of RBD symptoms and poorer treatment effect on subjective sleep quality. PSG results did not reveal findings of RSWA but suggested a tendency toward poorer sleep quality in PTSD patients with RBD symptoms. Our findings indicate that addressing RBD symptoms might hold a potential to enhance treatment outcome, underscoring the significance of incorporating sleep-related interventions alongside established PTSD therapies. Further studies are needed to clarify the role of RBD symptoms in this growing and vulnerable patient population.



## References

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