

Systematic Review into the effects of sleep deprivation on the development of PTSD

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Introduction

PTSD is an increasingly common and debilitating illness. Reportedly, 70% of people experience trauma at some point in their life, 30% before 16.

Not everyone who suffers experiences a traumatic event develops PTSD. Current research shows that it can take months for symptoms to manifest, meaning that many people who develop PTSD can be easily missed.

Alongside this, it is steadily becoming clearer that sleep disorders are linked to the development of many psychiatric conditions.

It would not be unreasonable to assume that poor sleep can predispose to PTSD, and that therefore PTSD development can be predicted based on sleep quality.

This idea has been researched many times in a variety of journals, but as of yet this research has not been compiled into a single systematic review.

Aim

- To examine if sleep problems, such as nightmares and insomnia, are risk factors for future PTSD development.
 - How strong is this link?
 - Do sleep problems predict PTSD development differently in the Military and Children/Adolescents compared to the general adult population?
 - Is this link consistent in all sleep subcategories (Sleep duration, quality, latency, and maintenance)

Hypothesis:

There is a link between poor sleep and PTSD. This link is stronger in nightmares, consistent in all demographics, with little variation between sleep subcategories

Method

Study Identification

Six databases ((Medline, Embase, Web of Science, Psychinfo, AMED, and Opengrey) were searched.

- 1) PTSD OR Post-traumatic Stress Disorder OR Posttraumatic Stress disorder OR Post Traumatic Stress Disorder
- 2) Sleep
- 3) Disturbance* OR Problem* OR Nightmare* OR Deprivation* OR Insomnia
- 4) Follow up OR longitudinal OR pre-post OR Predict* OR prospective OR repeated Measure
- 5) 2 AND 3
- 6) 4 AND 5
- 7) 1 AND 6

Table 1) Search strategy used in database search

- 1) Records must examine both Sleep disorders and PTSD
- 2) Records must examine the impact of sleep disorders in the development of new PTSD
- 3) Participants must not have PTSD at the start of the study
- 4) Study design must be a longitudinal cohort design
- 5) The study must be accessible to the University of Southampton
- 6) The study must focus on human subjects

Study Screening

Studies were screened against an inclusion/exclusion

Table 2) Inclusion/Exclusion criteria

Quality (Risk of Bias) Assessment

Studies were assessed through the CASP cohort checklist and the Ottawa-Newcastle scale. Low quality studies were removed.

Data Extraction

Data extraction was performed using an excel spreadsheet, which was continually improved upon throughout the course of the review

Data Synthesis

Studies were divided into 4 categories (is PTSD predicted by Insomnia, nightmares, REM sleep, or general sleep complaints)

General sleep complaints were then subdivided into 4 subcategories (poor sleep duration, quality, latency, and maintenance)

General adult, child/adolescent, and military demographics were examined in each section. Only data included in published studies was used.

Results

In total, the database searches found 1813 records. After the screening process, 115 studies were left for full text analysis. In total, 25 studies were deemed eligible for inclusion in this review.

Of the included studies, 9 examined the military, 7 children and adolescents, and 9 examined civilian adults.

Most studies used fairly similar methodology, although there was a wide range of tools used to measure sleep and PTSD (17 different tools measured sleep, and a different 17 measured PTSD).

Insomnia

13 studies looked at insomnia, almost all found that it predicted PTSD (but not exclusively).

Nightmares

5 studies looked at nightmares, all found that nightmares predicted specifically PTSD.

REM sleep

2 studies looked at REM sleep, and they found that it REM sleep in general doesn't seem to predict PTSD. However, REM theta waves may predict PTSD.

General sleep complaints

13 studies examined general sleep complaints, and found almost the same results as the studies looking into insomnia. Results on the sub categories are as follows:

Sleep duration

4 studies looked at sleep duration. Most found that it did not predict PTSD development.

Sleep quality

3 studies looked at sleep quality. Results were conflicted on whether it predicted PTSD.

Sleep latency

5 studies looked at sleep latency. 3 found that it did predict PTSD, but 2 found that it did not.

Sleep maintenance

4 studies examined sleep maintenance. They all found that it did predict PTSD.

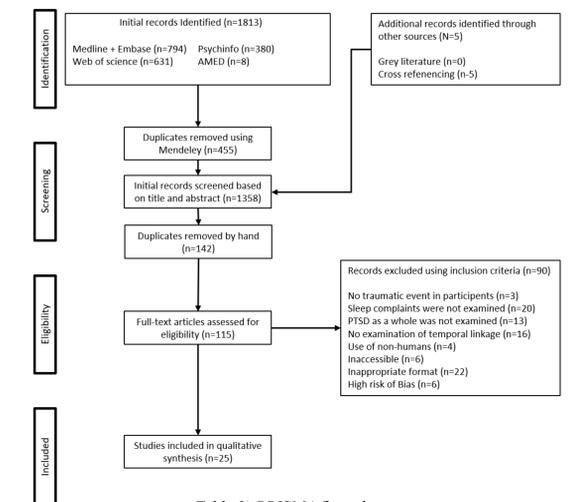


Table 3) PRISMA flow chart

Conclusion

There is a clear link between sleep problems and the development of PTSD. Insomnia predicts PTSD as well as a variety of psychiatric conditions, while nightmares are more specific to PTSD.

It is strange that the sleep subcategories don't seem to predict PTSD while overall poor sleep does predict it. Additionally, studies which heavily controlled for recall bias tended to be the ones that found no link. This implies that the more subjective, bias prone sleep measurement tools could be more effective at predicting PTSD, but more research into this area is much needed.

Additionally, this review was not a meta-analysis, and as such has several limitations when reviewing statistical data of the included studies. A meta-analysis in this area is much needed.

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