

The Accumulation of Beta-Amyloid Plaques During Sleep Relates to the Development of Alzheimer's Disease

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Background

- Investigate the link between poor sleep quality in preclinical Alzheimer's disease and beta-amyloid plaque buildup
- Alzheimer's, the most common form of dementia, is a growing United States health challenge impacting cognitive function
- Highlight the potential of sleep-focused interventions to reduce Alzheimer's risk and delay onset.
- Emphasize the role of sleep quality in Alzheimer's progression

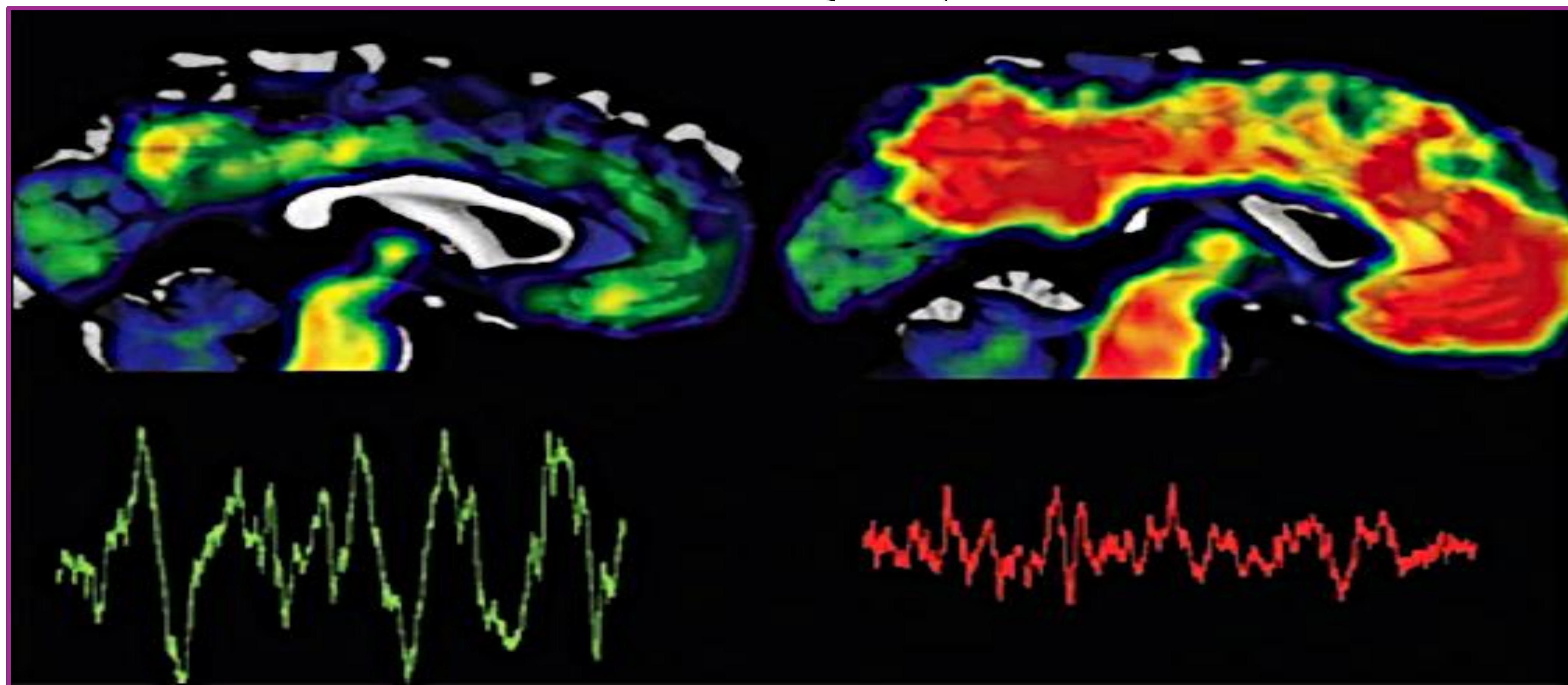


Figure 2 Heavy amyloid-beta deposits (red, right image) linked to poor sleep and Alzheimer's risk contrast with a healthy brain (left image) showing deep sleep benefits (Samson 2015).

Conclusion

- Improving sleep quality may reduce Alzheimer's risk and delay onset.
- More research is needed on how sleep affects Alzheimer's, with the potential for personalized prevention based on sleep and genetics.
- Public health should prioritize sleep education to support cognitive health.

Methods

To evaluate the accuracy in identifying beta-amyloid plaques and how they relate to preclinical Alzheimer's Disease. An extensive literature search of 7 peer-reviewed scientific journals was conducted using the University of Washington Library Database, focusing on peer-reviewed publications with an impact factor of 1.6 or higher

Key Findings

Those with poor sleep are 1.68 times more likely to develop Alzheimer's (Ju et al. 2013).

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Abnormal sleep patterns heighten Alzheimer's risk and speed up cognitive decline (Bubu et al. 2017).

Sleep issues, like trouble starting and maintaining sleep, affect 30-40% of Alzheimer's patients and are present in about 45% overall, worsening with dementia progression (Peter-Derex et al., 2015).

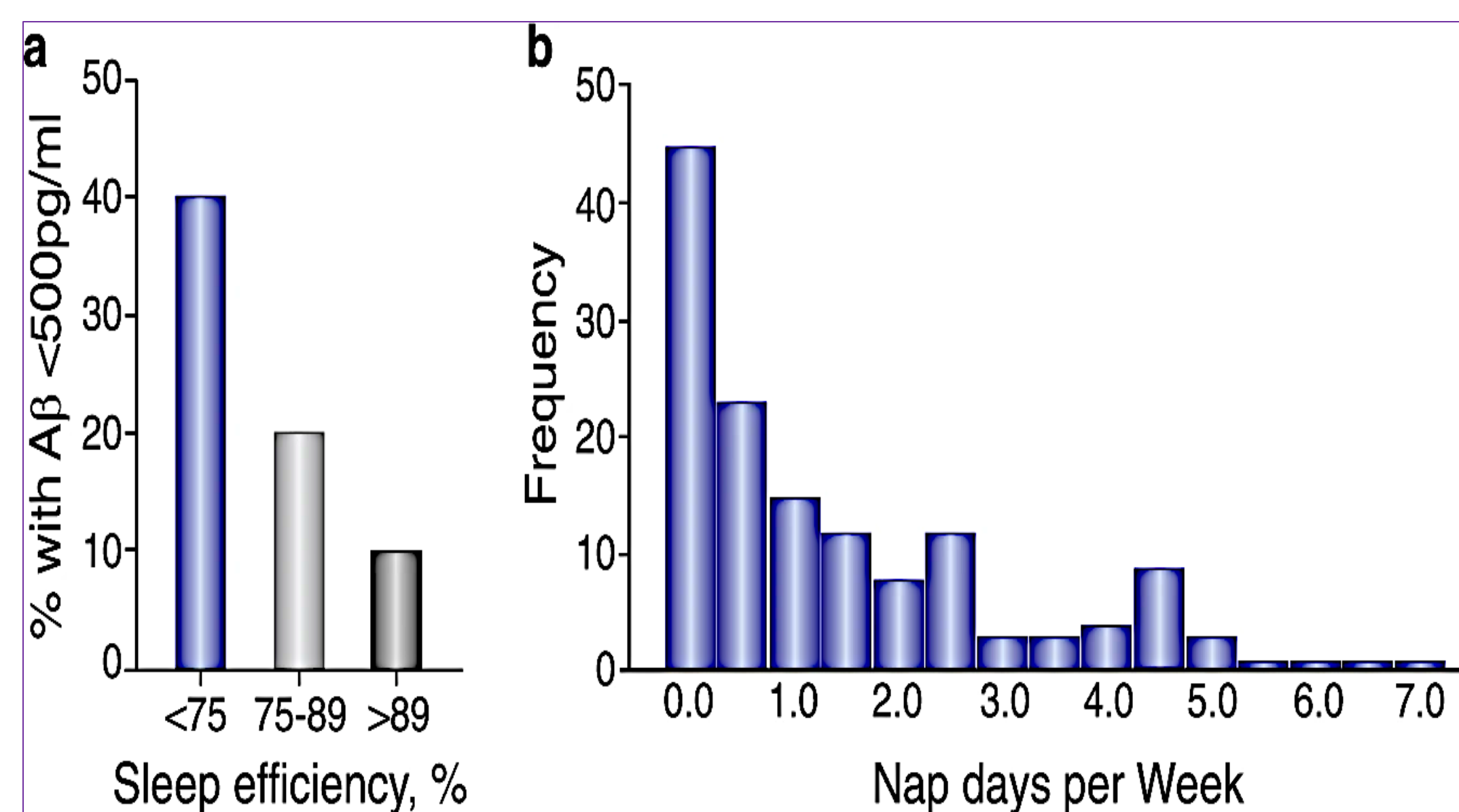


Figure 1. Poor sleep efficiency (<75%) correlates with higher abnormal Aβ42 levels (a), and preclinical amyloid pathology is associated with increased nap frequency (b), with vertical axes showing absolute frequency (Ju et al. 2013).

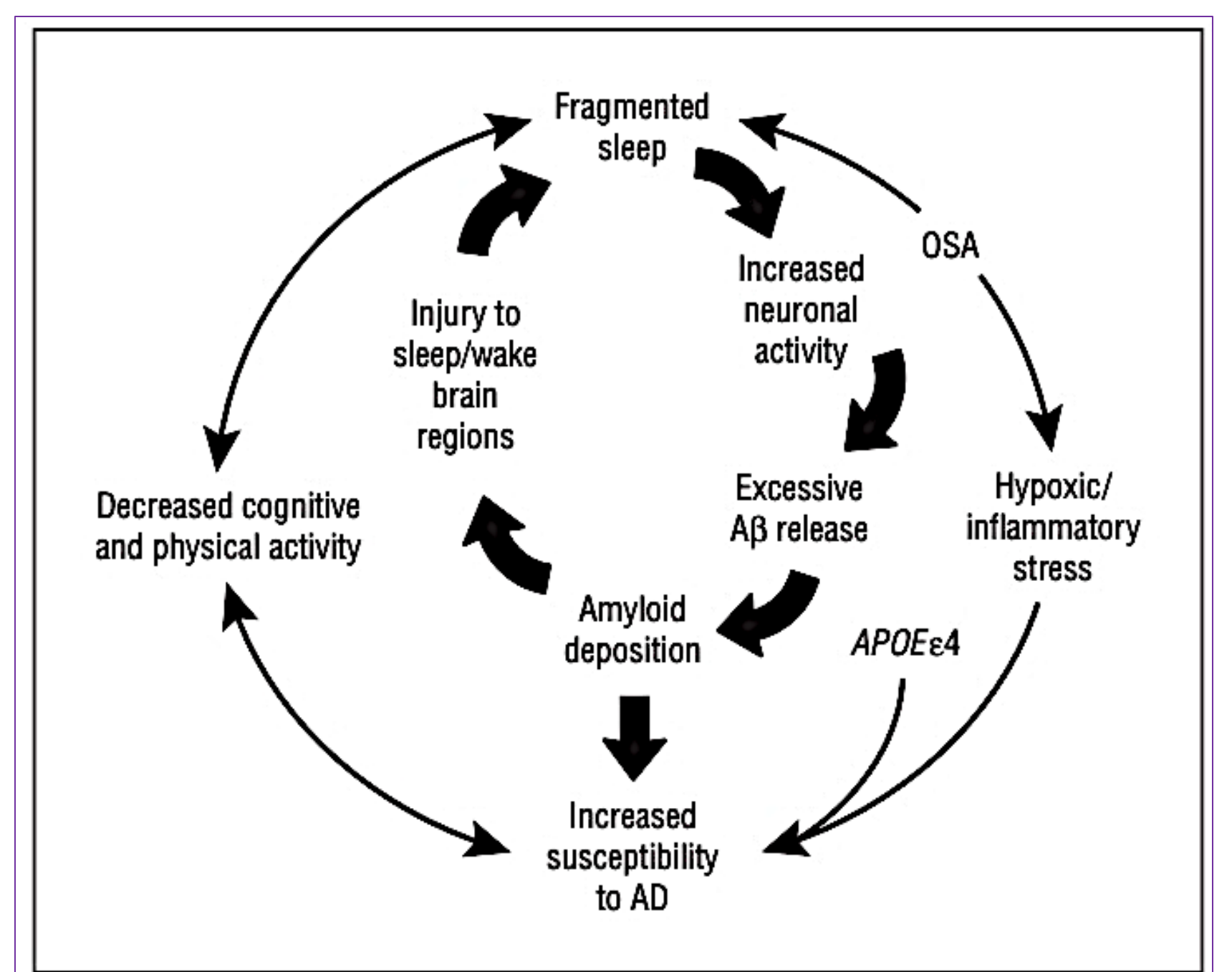


Figure 3. Shows the feedback loops between sleep, β-amyloid, Alzheimer's disease, and factors like obstructive sleep apnea (Ju et al. 2013).

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References:

