

WHY SLEEP MATTERS FOR OLDER ADULTS WITH HIV?



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Antiretroviral therapy (ART) has transformed HIV into a chronic disease, and many people with HIV are living as long as their HIV-negative counterparts (Deeks et al., 2013). Insomnia is difficulty falling asleep, staying sleep, and frequent awakenings, which can result in daytime sleepiness and impairments in daily functioning. In the US, insomnia is reported in 70% of people with HIV compared to less than 35% of the general population (Rubinstein & Selwyn, 1998; Taibi, 2013). Older adults with HIV may be more susceptible to poor sleep because of additive HIV and age-related changes in sleep patterns, inflammatory processes and immune function, and the presence of comorbidities (Gabuzda et al., 2020; Leone et al., 2021). The antiretroviral drug, Efavirenz, has been linked to sleep disorders and cognitive impairment (Shikuma et al., 2018). Poor sleep quality is a significant contributor to poor cognitive health (Mahmood et al., 2018), exacerbations in physical and mental illness (Cody et al., 2021), and poor quality of life (Rogers et al., 2020) in the aging HIV population.

Cognitive effects of poor sleep can be detrimental for older adults with HIV. Approximately 50% of people with HIV experience mild to moderate forms of cognitive impairment (Antinori et al., 2007), and some may be more likely to develop neurodegenerative diseases with aging (Mackiewicz et al., 2019). Sleep-associated cognitive impairments have been observed in people with HIV, and such impairments can interfere with ART adherence (Babson et al., 2013). Studies suggest that poor sleep and HIV are associated with an increase in proinflammatory cytokines which may explain why poor sleep quality in people with HIV can be damaging to cognitive function (Byun et al., 2017; Lee et al., 2014). The neuroinflammatory impact of poor sleep quality in older adults with HIV may be heightened with age-related inflammation, chronic disease, and inflammatory effects of COVID-19.

Sleep health is critical for cognitive and immune function in older adults with HIV, especially during the pandemic. For adults with HIV recovering from COVID-19, it will become a priority to examine and address the long-term cognitive effects as the pandemic eases. Clinicians are positioned to assess for symptoms that commonly co-occur with sleep disorders such as chronic pain, fatigue, and depression. The coronavirus pandemic elicits and exacerbates stressors for some older adults with HIV, and such stressors may interfere with sleep (Nguyen et al., 2021). For example, some older adults with HIV may experience increased fear of exposure to COVID-19 and losing family and friends; gaps in clinic appointments and ART regimens; stress related to finances; hesitation related to COVID-19 guidelines and vaccination; and loneliness from isolating themselves and others. Routine sleep assessments during clinic visits are essential for early diagnosis, treatment, and referral for sleep disorders,

which may improve health outcomes for adults aging with HIV. Future studies should examine the use of sleep telemedicine in adults with HIV. Such methods may be advantageous for people with HIV impacted by stigma and those living in rural areas where specialized care is limited.

REFERENCES

Antinori, A., Arendt, G., Becker, J. T., Brew, B. J., Byrd, D. A., Cherner, M., Clifford, D. B., Cinque, P., Epstein, L. G., Goodkin, K., Gisslen, M., Grant, I., Heaton, R. K., Joseph, J., Marder, K., Marra, C. M., McArthur, J. C., Nunn, M., Price, R. W., ... Wojna, V. E. (2007). Updated research nosology for HIV-associated neurocognitive disorders. *Neurology*, 69(18), 1789–1799. <https://doi.org/10.1212/01.WNL.0000287431.88658.8b>

Babson, K. A., Heinz, A. J., & Bonn-Miller, M. O. (2013). HIV medication adherence and HIV symptom severity: The roles of sleep quality and memory. *AIDS Patient Care and STDs*, 27(10), 544–552. <https://doi.org/10.1089/apc.2013.0221>

Byun, E., Gay, C. L., Portillo, C. J., Pullinger, C. R., Aouizerat, B. E., & Lee, K. A. (2017). Cytokine polymorphisms are associated with daytime napping in adults living with HIV. *Sleep Medicine*, 32, 162–170. <https://doi.org/10.1016/j.sleep.2016.12.021>

Cody, S. L., Hobson, J. M., Gilstrap, S. R., Gloston, G. F., Riggs, K. R., Justin Thomas, S., & Goodin, B. R. (2021). Insomnia severity and depressive symptoms in people living with HIV and chronic pain: associations with opioid use. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*. <https://doi.org/10.1080/09540121.2021.1889953>

Deeks, S. G., Lewin, S. R., & Havlir, D. V. (2013). The end of AIDS: HIV infection as a chronic disease. *Lancet*, 382(9903), 1525. [https://doi.org/10.1016/S0140-6736\(13\)61809-7](https://doi.org/10.1016/S0140-6736(13)61809-7)

Gabuzda, D., Jamieson, B. D., Collman, R. G., Lederman, M. M., Burdo, T. H., Deeks, S. G., Dittmer, D. P., Fox, H. S., Funderburg, N. T., Pahwa, S. G., Pandrea, I., Wilson, C. C., & Hunt, P. W. (2020). Pathogenesis of aging and age-related comorbidities in people with HIV: Highlights from the HIV ACTION Workshop. *Pathogens and Immunity*, 5(1), 143. <https://doi.org/10.20411/PAI.V5I1.365>

Lee, K. A., Gay, C., Pullinger, C. R., Hennessy, M. D., Zak, R. S., & Aouizerat, B. E. (2014). Cytokine polymorphisms are associated with poor sleep maintenance in adults living with Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome. *Sleep*, 37(3), 453. <https://doi.org/10.5665/SLEEP.3474>

Leone, M. J., Sun, H., Boutros, C. L., Liu, L., Ye, E., Sullivan, L., Thomas, R. J., Robbins, G. K., Mukerji, S. S., Brandon Westover, M., & Liu, L. (2021). HIV increases sleep-based brain age despite antiretroviral therapy. *Sleep*, 44(8). <https://doi.org/10.1093/sleep/zsab058>

Mackiewicz, M. M., Overk, C., Achim, C. L., & Masliah, E. (2019). Pathogenesis of age-related HIV neurodegeneration. *Journal of NeuroVirology*, 25(5), 622–633. <https://doi.org/10.1007/s13365-019-00728-z>

Mahmood, Z., Hammond, A., Nunez, R. A., Irwin, M. R., & Thames, A. D. (2018). Effects of sleep health on cognitive function in HIV+ and HIV- adults. *Journal of the International Neuropsychological Society*, 24(10), 1038–1046. <https://doi.org/10.1017/S1355617718000607>

Nguyen, A. L., Davtyan, M., Taylor, J., Christensen, C., Plankey, M., Karpiak, S., & Brown, B. (2021). Living with HIV during the COVID-19 pandemic: Impacts for older adults in Palm Springs, California. *AIDS Education and Prevention: Official Publication of the International Society for AIDS Education*, 33(4), 265. <https://doi.org/10.1521/AEAP.2021.33.4.265>

Rogers, B. G., Lee, J. S., Bainter, S. A., Bedoya, C. A., Pinkston, M., & Safren, S. A. (2020). A multilevel examination of sleep, depression, and quality of life in people living with HIV/AIDS. *Journal of Health Psychology*, 25(10–11), 1556–1566.
<https://doi.org/10.1177/1359105318765632>

Rubinstein, M. L., & Selwyn, P. A. (1998). High prevalence of insomnia in an outpatient population with HIV infection. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology*, 19(3), 260–265. <https://doi.org/10.1097/00042560-199811010-00008>

Shikuma, C. M., Kohorn, L., Paul, R., Chow, D., Kallianpur, K. J., Walker, M., Souza, S., Gangcuangco, L. M., Nakamoto, B. K., Pien, F. D., Duerler, T., Castro, L., Nagamine, L., & Soll, B. (2018). Sleep and neuropsychological performance in HIV+ subjects on Efavirenz-based therapy and response to switch in therapy. *HIV Clinical Trials*, 19(4), 139. <https://doi.org/10.1080/15284336.2018.1511348>

Taibi, D. M. (2013). Sleep disturbances in persons living with HIV. *Journal of the Association of Nurses in AIDS Care*, 24(SUPPL. 1). <https://doi.org/10.1016/j.jana.2012.10.006>