

- 5 Siegel JM. Sleep function: an evolutionary perspective. *Lancet Neurol* 2022; **21**: 937–46.
- 6 Banks S, Dorrian J, Basner M, Kaizi-Lutu M, Dinges DF. Sleep deprivation. In: Principles and practice of sleep medicine, 7th edn. Kryger M, Roth T, Goldstein CA, Dement WC, eds. Philadelphia, PA: Elsevier, 2022: pp 47–51.
- 7 Riemann D, Nissen C, Palagini L, Otte A, Perlis ML, Spiegelhalder K. The neurobiology, investigation, and treatment of chronic insomnia. *Lancet Neurol* 2015; **14**: 547–58.
- 8 Irwin MR, Vitiello MV. Implications of sleep disturbance and inflammation for Alzheimer's disease dementia. *Lancet Neurol* 2019; **18**: 296–306.
- 9 Zhao ZD, Yang WZ, Gao C, et al. A hypothalamic circuit that controls body temperature. *Proc Natl Acad Sci USA* 2017; **114**: 2042–47.
- 10 Kryger M, Goldstein CA. COVID-19 and sleep. In: Principles and practice of sleep medicine, 7th edn. Kryger M, Roth T, Goldstein CA, Dement WC, eds. Philadelphia, PA: Elsevier, 2022: pp 1999–2009.



Social determinants and health disparities affecting sleep

For the Series on sleep and sleep disorders see <http://www.thelancet.com/series/sleep-disorders>

The past two decades have witnessed a remarkable and sustained emphasis on research delineating health disparities in sleep and sleep disorders in the USA and globally.^{1,2} Health disparities are defined as inequitable and preventable differences in health outcomes between groups (eg, racial and ethnic groups), which remain unresolved because they are entrenched in historical, socioeconomic, and cultural or political contexts. Addressing disparities with regard to sleep is warranted given their link with cardiometabolic diseases, as well as the mounting health-care costs with which they are associated.³ We have observed in the USA that individuals from minority ethnic or racial backgrounds and individuals from low-income households experience a disproportionately greater burden of sleep-related chronic illness, relative to White individuals and individuals living in affluent households.¹ The burden of poor sleep (<7 h per night) in minority racial and ethnic communities might be directly linked to the disproportionately higher prevalence of metabolic diseases, including obesity, hypertension, diabetes, and dyslipidaemia, in these populations.⁴ As discussed

in a Series on sleep and sleep disorders in *The Lancet* and *The Lancet Neurology*, given the complex array of risk factors that modulate sleep and its underlying mechanisms, further research is urgently needed for the implementation of interventions to improve sleep among minority racial and ethnic groups with chronic illnesses.⁵

Race and ethnicity have not always been the primary focus of investigation, but merely factors adjusted for in statistical models. Converging evidence now supports the belief that adults from minority racial and ethnic groups experience shorter nightly sleep duration (35–60 min less per night) than do their White counterparts. This finding is consistent with our analysis of National Health Interview Survey data from 1977 to 2020 demonstrating that Black people were more likely to experience poorer sleep health than White people, and that trends over the past five decades favoured an increase in the gap between Black people and White people regarding the prevalence of poor sleep.¹ Our work over the past decade has shown that sleep loss in the US Black population is more than double that seen in the White population, and that this difference partly accounts for disparities in cardiometabolic disease. These observations are alarming, since sleep is linked to cardiometabolic health, independent of sociodemographic factors and other diseases. Other analyses from our group identified many predictors of poor sleep among Black people, including metabolic diseases, emotional distress, racism, living in disadvantaged neighbourhoods, lack of access to greenspace, occupational factors, increased unhealthy exposures (eg, exposure to light pollution, noxious noise, air pollutants, and suboptimal temperature), and lack of social connections and emotional support.^{6,7} Although research has generally focused on sleep duration, disparities are also found in sleep quality, sleep timing and regularity, and sleep fragmentation due to untreated sleep apnoea.



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Disparities do not emanate solely from disorders that disproportionately affect a given population, as might be the case for sleep apnoea, which is more prevalent among adults in minority ethnic groups (prevalence of more than 30% in Black people vs about 10% in White people).⁸ Arguably, disparities in sleep could result from predisposing physiological and genetic factors, but these biological factors alone do not fully account for observed disparities. Available data also show that traditional indicators of disparity (eg, socioeconomic status and health-care access) account for only a small portion of the disparities, some of which might originate from the variability in health-care use, quality, and outcomes. Consistent with the relevance of sleep as a novel target for personalised medicine, public health investigators have decried the lack of effort to explore potential mechanisms underlying the high burden of sleep-related chronic diseases.⁹ Emerging evidence points to the role of WHO-defined social determinants of health as potential explanatory factors for the observed disparities in sleep. Briefly, these social determinants of health refer to the conditions in the environment where people are born, live, learn, work, play, worship, and age that affect a wide range of health and quality-of-life outcomes and risks. In the context of sleep, evidence supporting the role of these environmental and psychosocial stressors is sparse, but preliminary findings point to a promising research area that will help delineate the mechanisms of, and tackle disparities in, sleep.⁷ This research is crucial to realise mandates to improve health equity across all communities, not only in the USA, but globally.

In the USA, the Healthy People Framework 2030 goal to improve sleep for all, with a particular focus on minority racial and ethnic groups, is laudable. However, this achievement is only attainable via the application of proven strategies to reach at-risk individuals in affected communities.¹⁰ Our Sleep Disparities Workgroup, comprising various stakeholders (ie, providers, patients, and health champions), has demonstrated that community-engaged strategies supported by trust and equity are effective in developing and implementing sustainable programmes to address disparities in sleep.¹⁰ This sort of approach is essential to identify and refine

relevant research questions, to increase community participation, and to enhance sleep health education in minority racial and ethnic communities. Such equitable stakeholder engagement models are important, as they allow stakeholders and health champions to address their own economic, political, and social issues to promote the importance of a good night's sleep for health.

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- Jean-Louis G, Grandner M. Importance of recognizing sleep health disparities and implementing innovative interventions to reduce these disparities. *Sleep Med* 2016; **18**: 1–2.
- Grandner MA, Williams NJ, Knutson KL, Roberts D, Jean-Louis G. Sleep disparity, race/ethnicity, and socioeconomic position. *Sleep Med* 2016; **18**: 7–18.
- Institute of Medicine (US) Committee on Sleep Medicine and Research. Sleep disorders and sleep deprivation: an unmet public health problem. Colten HR, Altevogt BM, eds. Washington, DC: National Academies Press (US), 2006.
- Carnethon MR, De Chavez PJ, Zee PC, et al. Disparities in sleep characteristics by race/ethnicity in a population-based sample: Chicago Area Sleep Study. *Sleep Med* 2016; **18**: 50–55.
- Billings ME, Cohen RT, Baldwin CM, et al. Disparities in sleep health and potential intervention models: a focused review. *Chest* 2021; **159**: 1232–40.
- Grandner MA, Fernandez FX. The translational neuroscience of sleep: a contextual framework. *Science* 2021; **374**: 568–73.
- Williams NJ, Grandner MA, Wallace DM, et al. Social and behavioral predictors of insufficient sleep among African Americans and Caucasians. *Sleep Med* 2016; **18**: 103–07.
- Redline S, Tishler PV, Hans MG, Tosteson TD, Strohl KP, Spry K. Racial differences in sleep-disordered breathing in African-Americans and Caucasians. *Am J Respir Crit Care Med* 1997; **155**: 186–92.
- Johnson DA, Ohanele C, Alcántara C, Jackson CL. The need for social and environmental determinants of health research to understand and intervene on racial/ethnic disparities in obstructive sleep apnea. *Clin Chest Med* 2022; **43**: 199–216.
- Seixas AA, Moore J, Chung A, et al. Benefits of community-based approaches in assessing and addressing sleep health and sleep-related cardiovascular disease risk: a precision and personalized population health approach. *Curr Hypertens Rep* 2020; **22**: 52.

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