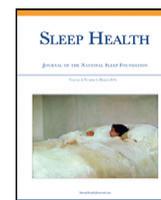


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Editorial

Can we ever know the sleep of our ancestors?

Recently, Gandhi Yetish and colleagues¹ published “Natural Sleep and Its Seasonal Variations in Three Pre-Industrial Societies” in *Current Biology*, arguing that the sleeping pattern of 3 communities in Bolivia, Tanzania, and Namibia shows how “modern” humans’ sleep is aligned with sleep patterns that are rooted in the evolution of our species. The communities they study have average sleep durations of 5.7–7.1 hours of nightly sleep compared with the roughly 7–8 hours of nightly sleep reported by people in the United States.² The evidence of Yetish et al¹ is extrapolated to “suggest that the bimodal sleep pattern that may have existed in Western Europe is not present in traditional equatorial groups today and, by extension, was probably not present before humans migrated into Western Europe,” contrary to recent findings,^{3,4} implying that *Homo sapiens* have always been a species that has slept in a consolidated fashion. Rather than accept these claims uncritically, it is vital to attend to the evidence—both within the study and the field at large—to understand the validity of these findings and suggestions, as they have potentially harmful implications for the diagnosis and treatment of sleep disorders.

Although one might be tempted to accept the evidence provided by Yetish et al as generalizable to living human populations as well as historical ones, the suggestion that humans are naturally consolidated sleepers and that a 6-hour average is adequate sleep should instead be seen as a very specific claim about 3 “modern” communities that are influenced by the same social forces that we all are, regardless of claims that they are “pre-industrial.” To deny the communities in Bolivia, Tanzania, and Namibia their modern status verges on scientific racism, which builds upon the assumption that these communities are living evolutionary artifacts. Moreover, any claim that there is one “natural” way of sleeping can lead to dangerous health outcomes in the pathologization and treatment of nonnormative sleep patterns. And, finally, the reason to sleep is rarely—if ever—grounded solely in physiological phenomena, more often depending upon social norms and cues, both in the present and in the past. In this brief essay, I review these concerns in relation to the study of Yetish et al to motivate more nuanced sleep research that attends to the diverse situations in which modern and historical communities have found themselves.

No contemporary community is analogous to that of an earlier evolutionary period. As anthropologist Eric Wolf pointed out in *Europe and the People Without History*,⁵ individuals, communities, and sometimes whole continents are used to make ideological arguments that are based more in the expectations of those making the claims than the empirical reality of those whom the claims are made about. Each of the groups who participated in the study of Yetish et al has been affected by centuries of colonialism, missionaries, postcolonial governments, and researchers; moreover, each of them participates in local labor and trade economies and has access to public services for their children. Consider this description of the Tanzanian Hadza’s political economy provided by anthropologist

Frank Marlowe: “Some Hadza guard the maize fields of their neighbors from animals ... Some Hadza do labor on the two large European farms in the Mangola area. From time to time, a Hadza may work as a game scout or work for the game department. A few Hadza have paid government positions as community development officers. A growing number of Hadza depend on tourist money.”⁶ Similarly, for the Bolivian Tsimane’, “Remote villages contain monolingual speakers of Tsimane’ who forage and practice swidden farming. Their contact with outsiders is limited to bartering rice or thatch palms for salt, metal tools, and alcohol. Villagers closer to towns have ham radios and primary schools with bilingual teachers. These villagers find it easier to sell rice, buy commercial goods, and work in nearby cattle ranches and logging camps.”⁷ The Ju/’hoansi San in Namibia have long been tied to local exchange networks, colonial administrations, and intertribal politics, leading to questions about their historical status as hunter-gatherers.⁸ To take any of these communities as representative of humans at an earlier stage of their social evolution is to fundamentally misunderstand how “modern” every society is in its integration into the contemporary world, from market interactions, to meeting the demands of public schools, employers, and local understandings of a community’s modernity. Often, in contexts such as these, where ways of life have changed significantly—or have been seen to have changed significantly—in relation to external demands and expectations, “traditional” forms of life become enshrined as fundamental markers of individual and community identity—far outstripping their historical relevance.⁹ Thus, although the individuals who participated in the study of Yetish et al may subsist on food procured through foraging and local horticulture, they also participate in “modern” institutions that shape their daily use of time and sleep. Ignoring these social influences, as the study of Yetish et al does, makes “natural” sleep more apparent at the expense of the social complexity of the communities under study.

Sleep is always social. Maybe more so than any other physiological experience that humans have, sleep is shaped by biological, environmental, and interpersonal cues. Taking lone sleepers stripped of their social interactions as representative of “natural” sleep ignores the social reality of human sleep. This is obvious in the supplementary material provided by Yetish et al in which they describe the sleeping conditions of Hadza families: “Families sleep close together, 2–6 people often sharing a single sleeping space.”¹ As anyone who sleeps with others knows, sleep is often profoundly shaped by those we share sleeping space with in sleep onset, through a night’s sleep, and in waking. School start times, work times, and other social commitments force action at particular times of the day, and although temperature may be causal in leading to wakefulness as Yetish et al claim, staying awake is often reinforced by social demands. These demands may be imposed on an individual, but they may as likely be demands upon those that an individual cares for or

depends upon; when a study such as that of Yetish et al ignores these social connections, sleep and wakefulness are stripped of the social determinants that structure everyday life, falsely imputing “nature” as an explanation for a set of phenomena that are intensely social.

Following from claims of a “natural” way to sleep are moral claims about correct sleeping, which can be detrimental to how we conceptualize what normal sleep and abnormal sleep are. If the dominant model of sleep in science is that one need only sleep 6-7 hours each night, what are we to make of those who sleep longer? What are we to think of those who sleep at irregular hours? If history is any guide, aberrant sleep is often pathologized, leading both to negative assessments of an individual's character and also to medical intervention.¹⁰ Moreover, the naturalization of a particular pattern of sleep and wakefulness can lead to the justification for particular institutional times, such as school start times and work times. School start times in the United States are increasingly accepted as being at odds with physiological experiences of adolescents, making plain the disconnect between socially approved school times and biological cues.¹¹ A study such as that of Yetish et al tends toward concretizing dominant models of consolidated nightly sleep as the only natural—and normal—form of sleep, thereby legitimating the medicalization of any form of sleep and wakefulness that fails to meet these natural standards.¹² But the anthropological and historical records clearly demonstrate that other modes of sleep are both possible and, for some people and whole societies, preferential.^{13–15} More important than justifying a particular model of “natural” sleep is the development of institutions that allow for a variety of human experiences of sleep and wakefulness that promote inclusion over pathologization¹⁰; studies that falsely find “nature” by excluding social forces do little to improve the human condition and more to ensure continued forms of discrimination and medicalization that identify individuals and specific populations as prone to being bad or unnatural sleepers.

All this is not to say that there is no merit in the study of Yetish et al, but the question they set out to answer, namely, “How did humans sleep before the modern era?” is fundamentally unanswerable. Roger Ekirch has conducted extensive work on premodern sleep,⁴ and other researchers have contributed substantially to our collective understanding of sleep in pre-1800 Europe, Asia, and the Americas.^{13,14,16} But unless a community has left a record of how they sleep, there is no way to know about that aspect of their lives and social organization. Premodern sleep will always be unknown and cannot be extrapolated backwards from modern communities. Accepting this scientific reality and working to describe the complex situations in which individuals and communities around the world sleep and conduct their everyday lives must be sufficient. Moreover, attention to the empirical conditions of life helps to show the broad variation of sleep and society that contemporary humans and our

ancestors have enjoyed and endured, including various forms of consolidated, biphasic, and polyphasic sleep. These other models of sleep help to expose how modern ideas about sleep are products of social circumstances and always based simultaneously in nature and culture, building on the human need for sleep, and shaped by social expectations of normal and abnormal behavior as concretized in our everyday institutions of school, work, family, and recreation.

Disclosures

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References

1. Yetish G, Kaplan H, Gurven M, et al. Natural sleep and its seasonal variations in three pre-industrial societies. *Curr Biol*. 2015;25:2862–2868.
2. Krueger PM, Friedman EM. Sleep duration in the United States: a cross-sectional population-based study. *Am J Epidemiol*. 2009;169:1052–1063.
3. Wolf-Meyer M. The nature of sleep. *Comp Stud Soc Hist*. 2011;53:945–970.
4. Ekirch AR. *At Day's Close: Night in Times Past*. New York: W. W. Norton; 2005.
5. Wolf ER. *Europe and the People Without History*. Berkeley: University of California Press; 1982.
6. Marlowe F. Why the Hadza are still hunter-gatherers. In: Kent S, editor. *Ethnicity, Hunter-Gatherers, and the "Other"*. Washington D.C.: Smithsonian Institution Press; 2002. p. 247–275.
7. Godoy R. *Indians, Markets, and Rainforests: Theory, Methods, Analysis*. New York: Columbia University Press; 2001.
8. Lee R. Solitude or servitude?: Ju/'hoansi images of the colonial encounter. In: Kent S, editor. *Ethnicity, Hunter-Gatherers, and the "Other"*. Washington D.C.: Smithsonian Institution Press; 2002. p. 184–205.
9. Hobsbawm E. Introduction: inventing traditions. In: Hobsbawm E, Ranger T, editors. *The Invention of Tradition*. Cambridge: Cambridge University Press; 1983. p. 1–14.
10. Wolf-Meyer M. *The Slumbering Masses: Sleep, Medicine, and Modern American Life*. Minneapolis, MN: University of Minnesota Press; 2012.
11. Hagenauer MH, Perryman JJ, Lee TM, Carskadon MA. Adolescent changes in the homeostatic and circadian regulation of sleep. *Dev Neurosci*. 2009;31:276–284.
12. Conrad P. *The Medicalization of Society: On the Transformation of Human Conditions Into Treatable Disorders*. Baltimore: Johns Hopkins University Press; 2007.
13. Brunt L, Steger B, editors. *Worlds of Sleep*. Berlin: Frank & Timme GmbH; 2008.
14. Steger B, Brunt L, editors. *Night-Time and Sleep in Asia and the West: Exploring the Dark Side of Life*. New York: RoutledgeCurzon; 2003.
15. Worthman CM, Melby MK. Toward a comparative developmental ecology of human sleep. In: Carskadon MA, editor. *Adolescent Sleep Patterns: Biological, Social, and Psychological Influences*. New York: Cambridge University Press; 2002. p. 69–117.
16. Williams S, Wolf-Meyer M. Longing for Sleep: Assessing the Place of Sleep in the 21st Century. In: Rhaikel E, editor. *Somatosphere*; 2013 [<http://somatosphere.net/series/longing-for-sleep>].