Sleep health in China: status, challenges, and promotion strategies

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This Review synthesises the epidemiological patterns of sleep and sleep disturbance in China, discusses national strategies and challenges, and proposes future directions. To promote sleep health, the Chinese Government has implemented multifaceted strategies structured across three domains: national policies, health-care systems, and research systems. Despite these efforts, challenges persist in two areas: deep-seated factors that influence sleep disturbance, and systemic limitations in health care and surveillance that constrain an effective response. Progress will depend on a concerted strategy to transform socioeconomic and cultural norms, enhance public awareness, strengthen health-care systems, and build national research and technological infrastructure.

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Introduction

Over the past decade, poor sleep health has emerged as an important public health issue. Sleep health goes beyond the absence of sleep disturbance to include the promotion of overall wellbeing. Sleep health is a multidimensional concept characterised by several key areas, including subjective satisfaction, appropriate alertness and timing, high efficiency, adequate duration, and sustained regularity, which are crucial to both physical and mental health.[1] Disturbed sleep, in turn, can cause substantial daytime distress and functional impairment.[2] The COVID-19 pandemic further worsened sleep health, as a meta-analysis from 49 countries estimated a global prevalence of sleep disturbance of approximately 40·5% between 2019 and 2021.[3] Moreover, a subsequent meta-analysis comprising data from 38 countries indicated that the global prevalence of post-COVID-19 sleep disturbance has not returned to pre-pandemic rates, with poor sleep quality, excessive daytime sleepiness, insomnia, and sleep apnoea being the most frequently reported at high rates (panel).[4]

In China, as in many countries, poor sleep health is a major public health issue, emerging within the rapid societal transformation and urbanisation.[5] A 2024 meta-analysis of 376 824 people in the Chinese general population reported a pooled prevalence of poor sleep quality of 19%.[6] Sleep disturbance has placed an increasing burden on both China's health and economy. For instance, an analysis of data from the China Family Panel Studies—which surveyed households across 25 provinces or administrative equivalents—estimated that short sleep duration (≤6 h per night) in Chinese adults (age 20 or older) contributed to 115 million years of life lost and an economic cost of US$628·15 billion (4·62% of gross domestic product [GDP]) in 2018, which marked a substantial increase from 3·23% in 2010.[7] In response, several strategies to promote sleep health have been implemented, particularly through the Healthy China 2030 plan, which incorporates specific targets to increase average sleep duration and reduce the insomnia prevalence.[8] Moreover, the National Health Commission of China designated 2025–27 as the Years of Pediatric and

Panel: Definitions and key features of common sleep disturbances based on the International Classification of Sleep Disorders[2]

Insomnia
A sustained difficulty with sleep initiation or maintenance that is associated with concern, dissatisfaction, or perceived daytime impairment, which might manifest as fatigue, emotional disturbances (such as irritability or low mood), general malaise, or cognitive dysfunction.

Obstructive sleep apnoea
Recurrent episodes of complete (apnoea) or partial (hypopnoea) upper airway obstruction during sleep, resulting in decreased blood oxygen saturation, and is typically interrupted by transient arousals from sleep.

Restless legs syndrome
An urge to move the limbs, frequently accompanied by uncomfortable sensations. This urge is frequently, although not invariably, accompanied by unpleasant sensations in the limbs or a vague, indescribable discomfort. Although the lower limbs are most typically affected (often bilaterally), upper limbs and major joint involvement (eg, hips or shoulders) can also occur.

Circadian rhythm sleep–wake disorder
A chronic or recurrent pattern of sleep–wake rhythm disruption. This disruption can lead to difficulty falling asleep, staying asleep, or excessive daytime sleepiness, and causes considerable distress or impairment in mental, physical, social, occupational, educational, or other important areas of functioning.

Narcolepsy
Excessive daytime sleepiness and abnormal features of rapid eye movements (REM) sleep. In type 1 narcolepsy, the condition includes cataplexy, which is the most specific sign of REM sleep dissociation. In type 2 narcolepsy, cataplexy is absent, but abnormal REM-related findings are still present on polysomnography or the multiple sleep latency test.

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Mental Health Services, with a key focus on enhancing health-care services for sleep disturbance.[9]

In this Review, we synthesise the status of sleep health in China by examining epidemiological patterns of sleep and sleep disturbances, risk factors, and health effect, as well as delineating existing strategies for promoting sleep health. We identify the main challenges hindering these efforts and propose several future directions to further advance sleep health in China.

Status of sleep health in China

Epidemiological patterns of sleep and sleep disturbance

Although large-scale, nationwide longitudinal surveys on sleep patterns in China are scarce, several cross-sectional studies indicate that mean sleep duration has gradually increased over the past two decades. Data from the Chinese Kadoorie Biobank survey (2004–08) that included 512 891 adults (age 30–79 years) across ten regions reported a mean sleep duration of 7·38 h (± 1·37 h).[10] A survey based on the China Family Panel Studies (2014–20), which recruited 22 848 adults (age 18 or older), showed a mean sleep duration of 7·56 h (± 1·82 h).[11] A study of 141 250 participants showed that 9706 (51·7%) of 18 761 people post-COVID-19 pandemic could report 6–8 h of sleep compared with 34 530 (50·4%) of 68 533 people pre-pandemic.[12]

Conversely, the prevalence of insomnia and obstructive sleep apnoea (OSA) presents an increasing concern (appendix p 2). The Chinese Kadoorie Biobank survey (2004–08) reported a 16·8% prevalence of insomnia symptoms.[10] This prevalence increased after the COVID-19 pandemic, with a cross-sectional survey showing a 29·2% prevalence of insomnia symptoms among 56 679 Chinese adults (age 18 or older) from all 34 provinces during February–March, 2020.[13] Even as the pandemic's initial effect receded, the prevalence of insomnia symptoms remained largely unchanged, with a web-based cross-sectional survey of 15 000 Chinese people reporting a 30·9% prevalence of insomnia symptoms in June, 2020.[14] This upward trend continued post-COVID-19, with a 2022 nationwide web-based survey of 8970 individuals, across all age groups, reporting insomnia symptom prevalence of 46·8%.[15] OSA is highly prevalent in China.[16] This burden is increasing, as a multilevel meta-analysis (2000–24) of 178 049 Chinese people indicated a pooled OSA prevalence of 11·8%, with an apparent increase from 8·1% (2000–05) to 26·9% (2021–24).[17]

See Online for appendix

The distribution of sleep disturbance shows geographical and temporal disparities. Geographically, a large nationwide web-based survey in 2019—comprising 94 454 residents across 31 provinces—found that northwest China had the highest rates of sleep disturbance, whereas the lowest rates were in east China, after adjusting for age.[18] These observed geographical disparities might be attributable to regional differences in lifestyle factors (eg, dietary habits), socioeconomic status, and environmental exposures across China. Additionally, seasonal effects also affect the development of specific sleep disturbance. A notable example is narcolepsy. A retrospective study of 629 patients with narcolepsy in Beijing found a striking seasonal pattern in disease onset between 1998 and 2011. The incidence was approximately 6–7-fold higher in late spring or early summer than in the late autumn or early winter.[19]

Risk factors

Sleep health and sleep disturbance in China are associated with a complex interplay of risk factors across four key domains: biological, lifestyle, social, and environmental (figure 1).

Biological factors have an important role in sleep disturbance. For instance, genetic predispositions contribute to the risk of specific disorders such as OSA and restless legs syndrome, with relevant genetic loci identified in Chinese populations.[20,21] Age and sex are also key determinants. Sleep patterns naturally evolve across the lifespan, from longer and more consolidated sleep in childhood and adolescence, to shorter and more fragmented sleep in older adults.[22] Correspondingly, the prevalence of both insomnia and OSA increases with age,[10,17] but with distinct sex-specific patterns: males report a higher OSA prevalence, whereas females have a higher prevalence of insomnia symptoms.[10,17] Furthermore, comorbidity has been associated with poor sleep—a national survey of Chinese adults reported a higher prevalence of insomnia symptoms in people with major depressive episodes, generalised anxiety disorders, or any chronic diseases.[10]

Lifestyle is an important factor affecting sleep health. Adherence to a healthy lifestyle (eg, nutritious diet, regular eating rhythms and physical exercise, abstinence from smoking and alcohol, low sedentary behaviour, and healthy bodyweight) was linked to a greater likelihood of good sleep quality, normal sleep duration, healthier sleep patterns, and a reduced risk of most sleep disorders (except narcolepsy), when compared with unhealthy lifestyle practices.[23,24] In the digital age, excessive screen time and prolonged digital media use are emerging as major risk factors for poorer sleep quality.[25]

Social factors are also linked to sleep health. Studies indicate that urban residents in China report a lower prevalence of both insomnia symptoms and OSA compared with rural residents.[10,17] Additionally, lower social support (eg, living far from community health services), poor self-perceived economic status, lower education attainment, occupational factors (eg, shift work), and work or academic stress (eg, poor academic performance) also correlate with an increased risk of sleep disturbance in China.[10,17,18,26,27]

Environmental exposures are a growing concern. Factors such as ambient artificial light at night,[28] neighbourhood noise pollution,[29] exposure to air

Figure 1: **Risk factors for, and effects of, sleep disturbance in China**

(A) Main risk factors for sleep disturbance. Prevalence data on insomnia symptoms and obstructive sleep apnoea across different subgroups (such as age, sex, and urban *vs* rural residence) were derived from the Chinese Kadoorie Biobank survey (2004–08),[10] and a multilevel meta-analysis of studies conducted in China.[17] Data on the proportion of Chinese people with short sleep duration (≤6 h) or long sleep duration (≥9 h) across different age subgroups were also from the Chinese Kadoorie Biobank survey (2004–08).[10] (B) Main effects of sleep disturbance on health and socioeconomic development. Data for the economic cost attributable to sleep loss presented are from the China Family Panel Studies.[7] OSA=obstructive sleep apnoea.

pollutants,[30] and higher ambient temperature have each been linked to diminished sleep duration or quality and an augmented risk of sleep disorders (eg, OSA or insomnia) in China.[31,32] Moreover, emerging evidence suggests enhanced household or neighbourhood greenness might offer a protective effect against sleep disturbance.[33]

Effects of sleep disturbance on health

Sleep disturbance can have a profound effect on mental and cognitive health (figure 1). Robust evidence links sleep disturbances (eg, nightmares, insufficient sleep, excessive daytime sleepiness, and sleep disorders) to an increased risk of depression, anxiety, and suicide attempts,[34–37] establishing them as modifiable risk

factors for psychiatric morbidity. In particular, in children and adolescents, sleep disturbance is associated with an increased risk of attention-deficit hyperactivity disorder symptoms,[38] behavioural problems (eg, social problems, attention problems, and aggressive behaviour),[39] and poor school performance.[37] Furthermore, specific sleep patterns—such as prolonged sleep (>8 h) or disrupted circadian timing—have been linked to increased dementia risk and accelerated cognitive decline, especially in men and adults aged 60–74 years.[40] Additionally, OSA can cause cognitive impairment, likely due to intermittent hypoxia.[41]

The effects of sleep disturbance on physical health are also severe. Sleep disturbance (eg, atypical sleep duration, circadian rhythm disruption, and insomnia symptoms) is associated with an increased risk of multiple chronic conditions, including hypertension, hyperlipidaemia, diabetes, kidney disease, cardiovascular diseases, and reproductive system diseases.[42,43] A longitudinal follow-up study has also linked a consistent decrease in sleep duration to a higher incidence of cancer and increased cancer-related mortality.[44] Consistently, data from large-scale east Asian cohorts (Japan, China, Singapore, and South Korea) showed a J-shaped association between sleep duration and all-cause mortality, with deviations from 7 h associated with a higher risk in both men and women.[45] Additionally, the prognosis of existing diseases can also be worsened. For example, comorbid OSA in patients with acute coronary syndrome substantially increased the risk of subsequent major adverse cardiovascular and cerebrovascular events,[46] and insomnia was associated with increased risk of mortality in patients with stroke in China.[47]

Daytime napping (brief sleep during the day) is widespread in China, with about 46% of Chinese adults reporting often taking a nap.[10,14] However, longer napping is unfavourable for health. A meta-analysis reported that individuals napping for longer than 30 min had higher risks of all-cause mortality, cardiovascular disease, and metabolic disease than those taking shorter naps (<30 min).[48] Nationwide cohort studies of Chinese adults have consistently reported increased risks of cardiovascular disease and hypertension associated with naps longer than 30 min, and increased all-cause mortality risk with naps exceeding 60 min.[49,50]

Strategies and interventions

China has implemented a range of strategies to improve sleep health, based on a dual approach: prioritising prevention by promoting healthy lifestyles and environments while ensuring accessible pathways to treatment. This strategy spans across three domains: strengthening national policies, enhancing the clinical capacity of health-care systems, and expanding the funding and infrastructure of research systems (figure 2).

Strengthening national policies

China's national policies for promoting sleep health mainly cover two areas. First, is enhancing public awareness and promoting sleep hygiene. Driven by the Healthy China 2030 plan's goal of increasing average sleep duration from 6·5 h per day in 2019 to 7–8 h per day between 2022 and 2030,[8] the government has issued several national guidelines about sleep hygiene, with a particular focus on vulnerable populations, such as the *Guideline for Sleep Hygiene among Children Aged 0–5 Years*[51] and *Core Information and Interpretations on Sleep Health*.[52] These documents translate scientific evidence into actionable recommendations, covering both behavioural strategies (eg, maintaining a regular sleep–wake schedule, limiting daytime naps, engaging in daytime physical activity, pre-sleep precautions such as avoiding stimulants and shortening screen time) and the creation of optimal indoor sleep environments with tailored advice for vulnerable populations (eg, infants, children and adolescents, older adults, and working populations). This knowledge is disseminated through diverse channels such as social media, websites, targeted public health campaigns (eg, World Sleep Day activities), and educational courses about sleep.

The second area for promoting sleep health aims to foster a sleep-friendly environment by mitigating social and environmental risk factors, which involves tackling social pressures, most notably the academic burden on children and adolescents. Multisectoral initiatives, such as the Double Reduction policy (addressing the excessive academic burden and off-campus tutoring)[53] and the Sleep Management directive,[35] have regulated school schedules, homework volume, and extracurricular tutoring, thereby alleviating academic pressure and protecting necessary sleep time. Evidence suggests that these burden-reduction policies might yield positive outcomes for student sleep, with longitudinal studies subsequently showing a substantial decrease in insomnia symptoms in primary and middle school students.[53,58] Concurrently, environmental risk factors have also been addressed, with national environmental protection policies working to mitigate environmental sources of sleep disturbance, such as ambient artificial light, noise, and air pollution.

Enhancing the capacity of the health-care system

The country is enhancing its capacity to respond to the challenges by expanding access to sleep clinics, developing a qualified sleep medicine workforce, and ensuring the financial accessibility of health care.

A central strategy is expanding the sleep clinics within the national health-care system. According to a 2022 nationwide survey, 76% of the secondary and tertiary hospitals in China established specialised sleep clinics compared with 2% of primary hospitals.[54] To accelerate access to sleep services, China's National Health Commission has mandated that by the end of 2025 at least one hospital in every prefectural-level city

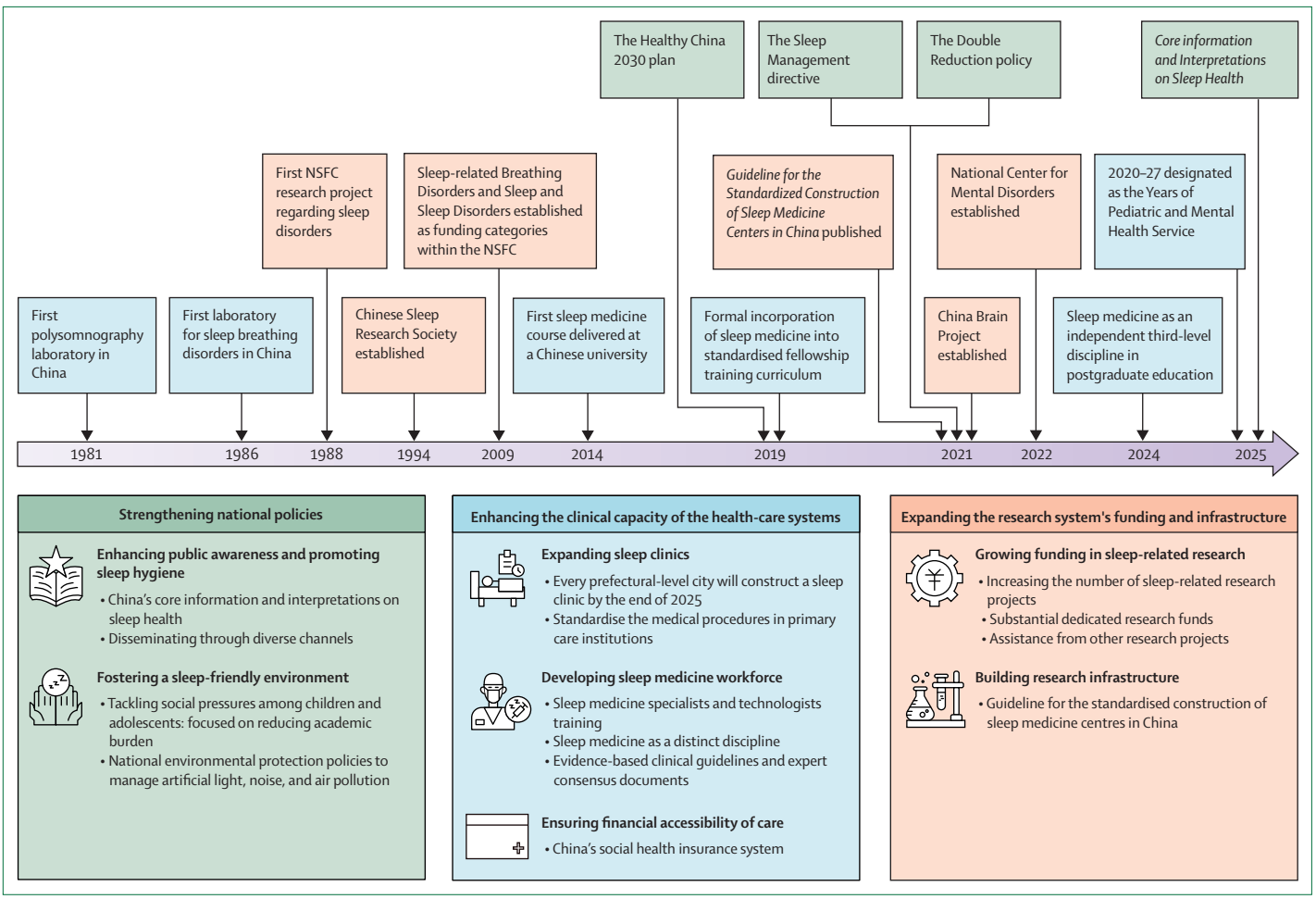

Figure 2: **Key milestones and strategies for promoting sleep health in China**
The national strategies to promote sleep health in China are structured across three key domains. First, national policies focus on enhancing public awareness and fostering a sleep-friendly environment.[8,35,51-53] Second, health-care system capacity is being enhanced by expanding sleep clinics, developing a qualified sleep medicine workforce, and ensuring the financial accessibility of care.[54,55] Lastly, the research system is being expanded through increased funding and the development of infrastructure.[56,57] NSFC=National Natural Science Foundation of China.

must establish a sleep clinic.[55] Meanwhile, efforts are underway to strengthen the role of primary care,[9] which serves as the initial point of contact for providing the pathways covering management, diagnosis, treatment, as well as referral for individuals with sleep disturbance.

Similar efforts have been undertaken to develop the workforce. A pivotal step was the Chinese Medical Association's formal incorporation of sleep medicine into its standardised fellowship training curriculum in 2019.[54] In this established medical fellowship training and accreditation system, resident physicians, upon completing training in relevant disciplines, are eligible to apply for advanced fellowship training in sleep medicine. Building on this foundation, in 2024, sleep medicine was designated an independent discipline under internal medicine within postgraduate curricula, signifying its status as a distinct academic field and ensuring a sustainable supply of qualified health professionals. To ensure the quality and consistency of care provided by this expanding workforce, a series of evidence-based guidelines and expert consensus documents has been developed (appendix p 3).[59,60]

Ensuring financial accessibility of care is another important aspect of the response, addressed primarily through China's social health insurance system. In 2024, this system covered over 1·33 billion people, with a participation rate of approximately 95%.[61] Coverage has been extended to include several medications for treating sleep disturbance, such as benzodiazepine derivatives for insomnia and pitolisant for narcolepsy.[62] In major cities such as Beijing, essential diagnostic procedures (eg, polysomnography) have also been included in the health insurance system.[63]

Expanding research

An in-depth understanding of sleep is essential for promoting sleep health and treating sleep disturbance—a reality reflected in China's increasing funding in sleep-related research. The number of sleep research

projects supported by the National Natural Science Foundation of China (NSFC) increased from one in 1988 to 51 in 2019, while annual funding increased more than 1000-fold from ¥15 000 in 1988 to ¥19·87 million in 2019.[56] Notably, in 2015, the Ministry of Science and Technology provided major funding for research into the brain functions of sleep through its National Basic Research Program (the 973 Program), with the grant exceeding ¥20 million. In 2023, the Medical Science Department of the NSFC further prioritised research on sleep medicine by allocating approximately ¥30 million to establish a special project focusing on sleep and sleep disturbance. Moreover, sleep research benefits from integration within major national research projects, such as the China Brain Project, which is developing large-scale cohort data and biological samples to facilitate discoveries and therapeutic interventions (appendix p 5).

This funding investment is matched by a commitment to building research infrastructure. Pivotal to this effort are specialised sleep medicine centres. The *Guideline for the Standardized Construction of Sleep Medicine Centers in China*,[57] released in 2021, offers a comprehensive framework for the establishment and operation of sleep centres.[57] An increasing number of medical centres equipped for sleep monitoring have been set up in China, with the current number estimated to be approximately 3000.[54] These specialised centres are complemented by national platforms, such as the National Center for Mental Disorders, which provide crucial infrastructure and resources for multidisciplinary sleep research.

Challenges

Translating these strategies into tangible improvements in sleep health faces challenges on two main fronts: the enduring drivers that cause sleep disturbance, as well as systemic limitations in health-care capacity and national surveillance designed to address them. Many of these issues are not unique to China, reflecting broader global trends in sleep health (appendix p 4).[64] A critical examination of these challenges is therefore essential for refining both China's domestic and international public health approaches (figure 3).

Factors influencing sleep disturbance in China

A primary challenge lies in the social–structural impediments that create a gap between national policy

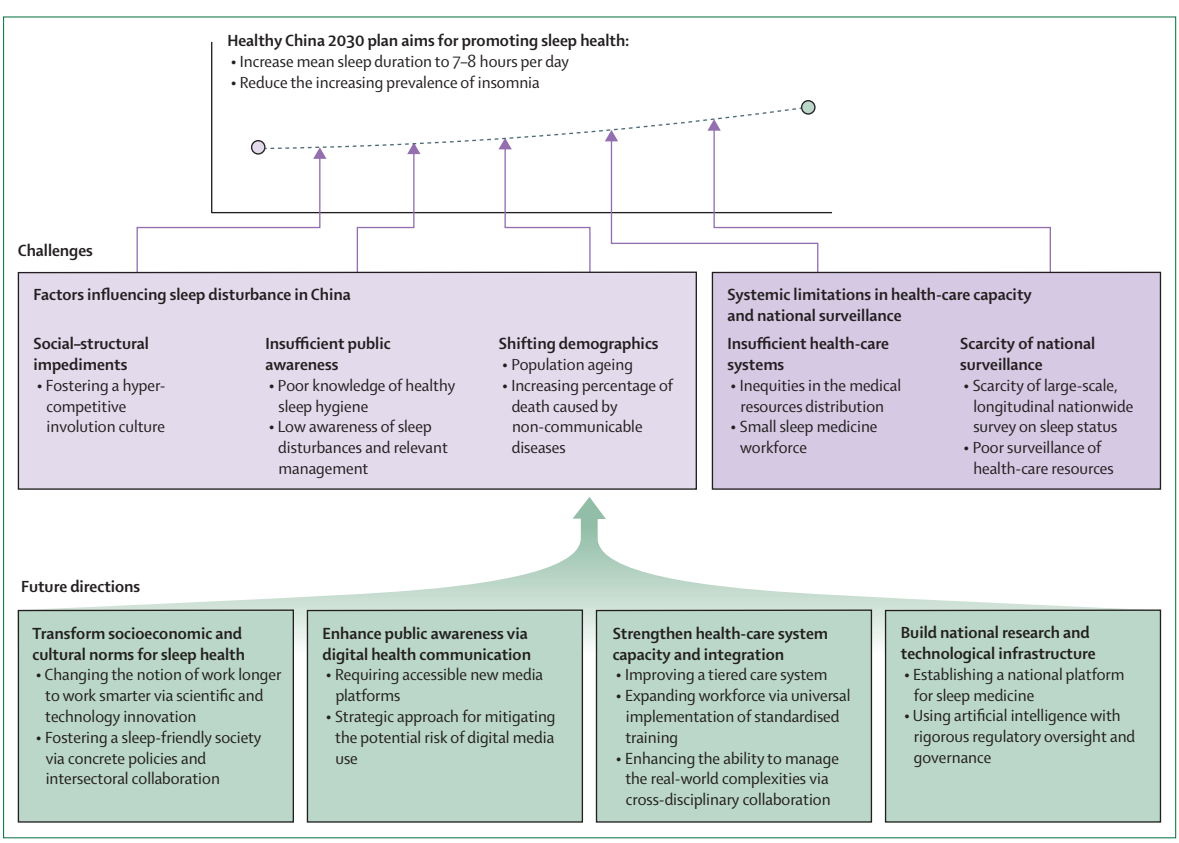

Figure 3: **Challenges and future directions for sleep health in China**
Promoting sleep health in China faces two substantial challenges: factors that influence sleep disturbance and systemic limitations of the health-care capability and national surveillance. Key future directions to address these challenges include transforming socioeconomic and cultural norms, enhancing public awareness, strengthening health-care system capacity and integration, and building national research and technological infrastructure.

aspirations and population sleep health outcomes, largely driven by the long-standing prioritisation of socioeconomic development. China has undergone unprecedented urbanisation and a nearly 2000-fold expansion in GDP between 1952 and 2024.[61] Although reflecting remarkable national achievements, this intense focus on growth has fostered a competitive culture—with intense pressure compelling individuals to sacrifice sleep for work or study to keep pace with perceived societal expectations.[65] This phenomenon is also observed in other east Asian countries, such as Japan and South Korea, which showed the shortest weekday sleep durations in a 35-country comparative analysis.[64] Evidence suggests an inverse correlation between GDP per capita and sleep quality in Chinese.[66] Therefore, effectively integrating sleep health considerations into broader socioeconomic development strategies remains a substantial hurdle for public health advancement in China.

Insufficient public awareness of sleep health also presents a huge challenge. First, knowledge of healthy sleep hygiene is often poor.[67] For instance, a 2023 cross-sectional survey in northwest China reported only moderate levels of knowledge, attitudes, and practices regarding sleep hygiene in patients with chronic insomnia.[68] Some inappropriate sleep hygiene notions (eg, using hypnotic medication excessively) and maladaptive pre-sleep behaviours (eg, late-night consumption of stimulants, prolonged use of digital devices before bed, or irregular eating patterns near bedtime) are associated with poor sleep quality.[69,70] Second, low public awareness extends to sleep disturbances recognition and management.[71,72] Consequently, these gaps in public knowledge represent a barrier to improving population-level sleep health.

Changes in demographics and disease burdens in China exacerbate the challenges of sleep health. Population ageing is a key driver. Data from the National Bureau of Statistics of China in 2024 indicated 15·6% of the population was 65 years or older, signifying a national transition from mild to moderate societal ageing.[61] With the proportion of the population 65 years or older projected to reach 25% by 2030, addressing the distinct sleep disturbance of older adults should be a substantial public health priority. Compounding this challenge is the rising burden of non-communicable diseases, which increased from 80% of the total disease burden in 2002 to 88·5% in 2019.[73] There is a bidirectional link between chronic diseases and sleep disturbance. A study conducted in Chinese populations has shown a bidirectional association between poor sleep quality or short sleep duration and multimorbidity in middle-aged and older adults.[74] Managing these intertwined conditions places considerable stress on the health-care system, as sleep disturbance is frequently under-recognised and undertreated in patients with chronic diseases.[71,72]

Systemic limitations in health-care capacity and national surveillance

Considerable challenges within the Chinese health-care system constrain the national response to sleep disturbance. Inequities in the distribution of medical resources, such as disparities persisting between eastern versus central and western regions,[75] impede access to specialised health care for sleep disturbance, particularly within primary medical institutions. Furthermore, an insufficient sleep medicine workforce presents another considerable challenge. Although sleep medicine is a recognised specialty in China, standardised training programmes are not universally implemented across all accredited residency bases, being largely confined to bases in major cities, such as Beijing.[54] This situation contributes to the insufficient number of qualified sleep specialists and technologists nationwide and to the variability in clinical expertise among practices. A 2022 nationwide survey underscored this workforce shortage, with 121 (68%) of 178 surveyed sleep laboratories having fewer than three sleep technologists and 73 (41%) having fewer than three doctors. Moreover, approximately 30% of these sleep laboratories cannot provide tests and interventions such as polysomnography, continuous positive airway pressure, or cognitive behavioural therapy for insomnia (CBT-I).[54] These deficits limit the ability to effectively diagnose and manage sleep disturbances on a large scale.

These health-care capacity issues are compounded by crucial gaps in nationwide surveillance. First, the scarcity of large-scale, longitudinal surveys of sleep status impedes the dynamic analysis of Chinese sleep health trends and hinders the evidence-based adjustment of public health strategies. Although some large-scale, longitudinal surveys have been established, their utility is often limited by methodological shortcomings, such as suboptimal standardised assessment protocols for sleep monitoring, insufficient engagement or endorsement from professional sleep medicine organisations, and a paucity of peer-reviewed publications disseminating their findings. Second, a gap exists in the surveillance of health-care resources. For instance, the precise number of sleep clinics nationwide remains unclear, constraining any analysis of whether the current clinical capacity is sufficient to meet population needs.

Future directions

China confronts multifaceted challenges in promoting sleep health. Future efforts should not only focus on tackling drivers, but also on strengthening the capacity to respond effectively. To achieve this goal, we propose four key future directions: (1) transform socioeconomic and cultural norms for sleep health; (2) enhance public awareness via digital health communication; (3) strengthen health-care system capacity and integration; and (4) build national research and technological infrastructure.

Transform socioeconomic and cultural norms for sleep health

A forward-looking strategy requires tackling the social–structural impediments to sleep health through a two-pronged approach. First, a shift from the so-called work longer ethos to a work smarter ethos is essential to decouple productivity from the culture of working long hours. The primary pathway to achieving this goal should be through investment in scientific and technological innovation. Developing and commercialising novel productivity tools can enhance efficiency, thereby preserving time for sleep without compromising economic development. This approach aligns with China's national innovation-driven development strategy and its ambition to be at the forefront of global science and technology by 2035.[76] Second, this shift should be accompanied by fostering a sleep-friendly society that actively counters the pressures of work and study. Such a move requires concrete, actionable policies, and could include, for instance, setting flexible working hours, limiting excessive overtime, and supporting nap-friendly environments in workplaces and schools. These policies will demand robust intersectoral collaboration, extending beyond the health sector to include other relevant sectors, such as education and human resources. Enhanced coordination among these sectors, supported by collaboration with judicial and law enforcement agencies, could improve policy coherence and protect the sleep health of all populations, particularly for those most vulnerable (eg, older adults, the working population, school-aged children and adolescents, and patients with chronic diseases).

Enhance public awareness via digital health communication

To enhance public awareness and empower individuals to take responsibility for their sleep health, it will be important to strengthen sleep hygiene knowledge dissemination. Based on existing national guidelines, such as China's *Core Information and Interpretations on Sleep Health*, this dissemination requires using accessible new media platforms (eg, short videos) to disseminate sleep hygiene and the importance of seeking timely clinical care. Although the use of digital channels for health communication can be highly effective, it requires careful consideration of potential side-effects, such as increased light exposure and delayed bedtimes associated with screen use.[25] To increase benefits while mitigating these risks, a strategic approach is essential. For instance, the dissemination content should explicitly include messages promoting digital wellness, such as limiting screen time before bed. Furthermore, dissemination can be timed for daytime hours to avoid disrupting sleep at night. For children and adolescents, in particular, these educational efforts should be integrated with technological safeguards, such as built-in usage timers and platform-level anti-addiction systems, to protect this vulnerable population.

Strengthen health-care system capacity and integration

Building health-care system capacity requires strengthening a tiered care system and expanding the professional workforce. Achieving equitable access requires enhancing the diagnostic and management capabilities of primary medical institutions and optimising specialised sleep clinics in secondary and tertiary hospitals. Crucially, these actions should be supported by a nationwide expansion of qualified sleep medicine specialists and technologists through the universal implementation of standardised training curricula, such as unified training for CBT-I. International models might offer valuable insights. For instance, standardised sleep medicine training in the USA involves a 12-month fellowship, after which specialists are eligible for certification examinations administered by primary specialty boards (eg, internal medicine, neurology, or psychiatry) under the American Board of Medical Specialties framework.

Beyond building the above capacity, a crucial next step is to enhance the system's ability to manage the complexities of real-world patient care, particularly for older adults and people with comorbid chronic diseases, necessitating a shift towards multidisciplinary integration. Such an approach requires that not only sleep specialists are familiar with relevant knowledge from other disciplines, but also that non-sleep specialists (eg, cardiologists or neurologists) are trained to recognise and manage sleep disturbance in their patient populations. Fostering this cross-disciplinary collaboration is important for providing holistic care. Furthermore, an essential component of this enhanced system's ability will be the establishment of a national framework for the regulation of pharmacological management of sleep disturbance, to ensure patient safety and curb the over-reliance on hypnotic medications.

Build national research and technological infrastructure

Establishing a national platform for sleep health is crucial to unify research planning and strengthen national surveillance. For example, the US National Center on Sleep Disorders Research established the 2021 National Institutes of Health Sleep Research Plan, promoting sleep science from basic research to clinical practice.[77] Although China has established the China Sleep Research Society and several national centres for mental disorders, a dedicated national centre for sleep health, incorporating a sleep research registry to connect researchers with potential participants, could bolster sleep research and clinical capabilities considerably. A dedicated national centre would provide the necessary infrastructure to support nationwide longitudinal surveillance needed to monitor sleep trends, evaluate public health interventions, and analyse health-care resources.

Furthermore, technological advancements can be useful tools for promoting sleep health and improving clinical services, particularly with artificial intelligence (AI). In alignment with the national strategy to prioritise

Search strategy and selection criteria

We searched PubMed, China National Knowledge Infrastructure, and Wanfang Data for literature published between Jan 1, 1980, and Aug 11, 2025, about the epidemiology, risk factors, health outcomes, and strategies for promoting sleep health in China. Our search strategy was designed to be representative, not exhaustive, using a combination of keywords related to core concepts. Search terms included: ("prevalence" OR "incidence" OR "mortality" OR "epidemiology" OR "burden" OR "risk factor" OR "socioeconomic" OR "mental" OR "lifestyle" OR "guideline" OR "expert consensus" OR "prevention" OR "intervention") AND ("sleep" OR "insomnia" OR "sleep apnoea" OR "OSA" OR "restless legs syndrome" OR "narcolepsy" OR "circadian rhythm" OR "sleep duration" OR "sleep quality" OR "sleep pattern" OR "sleep disorder" OR "sleep disturbance" OR "sleep problems" OR "nap") AND ("China" OR "Chinese"). The search was supplemented by reviewing international and domestic reports, governmental policy documents, and information from official government websites. Only articles and reports published in English or Chinese were included. Studies considered for inclusion were prioritised based on their scale, methodological rigor, and relevance. Preference was given to national or multiregional studies to ensure generalisability; longitudinal or cross-sectional research with large sample sizes; and high-quality studies published in major peer-reviewed journals. We then conducted a quality assessment of key epidemiological and clinical studies to ensure the reliability of the synthesised evidence (appendix pp 6–8).

AI in health care, its application in sleep health management is promising.[78] AI can enhance daily sleep monitoring, automate diagnostics, and personalise digital sleep intervention platforms.[79,80] However, the integration of AI is not without risks. The potential for algorithmic bias, data privacy breaches, and clinical errors from generative AI hallucinations necessitates a cautious approach. Therefore, realising the full potential of AI in sleep health management will depend on the development of rigorous regulatory oversight and governance.

Conclusion

China has devoted increasing attention to sleep health since the 1980s, driven by an increasing recognition of its role in physical and mental wellbeing, and the substantial burden induced by a wide spectrum of sleep disturbance. The country has implemented multilevel national strategies guided by a dual approach of prevention and accessible treatment. Despite these efforts, considerable challenges persist, from enduring drivers to systemic limitations in health care and surveillance. Securing a sleep-healthy future for China will therefore necessitate a more concrete, integrated strategy. We call for action to transform socioeconomic and cultural norms to foster a sleep-friendly society, enhance public awareness through strategic digital communication, strengthen health-care system capacity and integration, and build national research and technological infrastructure.

Contributors

LL, X-XL, and ZW contributed to design and conceptualisation of this Review. X-XL and ZW contributed to the literature review, drafted the original manuscript, and revised the review with input from S-JC, MVV, YKW, CMM, JS, and LL. LL provided final supervision and funding acquisition. All authors approved the final version of the manuscript and accept responsibility for the decision to submit it for publication.

Declaration of interests

We declare no competing interests.

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