

Risk Factors for Insomnia in Older Adults

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Insomnia is one of the most common sleep disorders experienced by older adults. Its prevalence among this population is relatively high, both nationally and internationally, and it is frequently associated with decreased quality of life, increased risk of chronic diseases, and psychological burden. This article aims to comprehensively review the factors influencing the risk of insomnia in older adults, including lifestyle, psychological conditions, environmental aspects, and physical illnesses. The method employed is a literature review, which involves collecting and analyzing 20 national and international journals published between 2006 and 2024. The findings indicate that insomnia in older adults does not occur in isolation but is influenced by a complex interaction between internal factors (psychological, physical illness, and lifestyle) and external factors (environment). This review is expected to provide both academic and practical contributions, particularly for healthcare practitioners, nurses, and researchers, in formulating evidence-based interventions to improve sleep quality in older adults.

Keywords: Insomnia, Older Adults, Sleep Disorders.

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1. Introduction

Sleep is one of the essential physiological needs in maintaining human health balance. Its functions extend beyond merely resting the body, as sleep also plays a fundamental role in nervous system recovery, strengthening immunity, and regulating metabolism. Among older adults, the need for sleep remains crucial; however, both the quality and quantity of sleep often decline with the biological aging process. Insomnia, characterized by difficulty initiating sleep, difficulty maintaining sleep, or non-restorative sleep, is one of the most common sleep disorders in this population. This condition significantly affects quality of life, impairs cognitive function, worsens chronic health conditions, and increases the risk of accidents and mortality (Peng et al., 2021).

According to the World Health Organization (WHO), the prevalence of insomnia in older adults is estimated to exceed 30% globally, with variations influenced by cultural, social, and physical health factors (WHO, 2020). In Indonesia, several studies have reported similarly high prevalence rates. For example, research by Suryani et al. (2018) on older adults in West Java revealed that nearly 40% of respondents experienced sleep disturbances of varying severity. Likewise, Lestari and Rahayu (2020) reported similar findings, linking insomnia in older adults to chronic illnesses such as hypertension, diabetes mellitus, and musculoskeletal disorders.

In addition to chronic diseases, psychological factors play a critical role in influencing insomnia risk. Depression, anxiety, loneliness, and psychosocial stress often exacerbate sleep disturbances in older adults. Casagrande et al. (2022) emphasized that poor psychological well-being among older adults is directly associated with an increased prevalence of insomnia, particularly in those living alone or experiencing social isolation. This is consistent with findings from a national study by Pratama and Sari (2019), which

demonstrated a positive association between anxiety, depression, and insomnia incidence among older adults in Yogyakarta.

Lifestyle is also a key determinant of sleep health in older adults. Excessive caffeine consumption, lack of daily physical activity, pre-sleep gadget use, and irregular sleep patterns have been shown to worsen sleep quality. A study by Al-Kandari et al. (2017) in the *Journal of Clinical Nursing* reported that regular physical activity reduced insomnia levels by up to 25% in older adults. These findings align with a national study by Wulandari and Nugroho (2021), which found that older adults engaged in light exercise routines, such as morning walks, experienced better sleep quality compared to inactive individuals.

Beyond lifestyle and psychological factors, environmental conditions also contribute significantly to insomnia risk. Poor sleep environments—such as noise, excessive lighting, uncomfortable room temperatures, and poor-quality mattresses or pillows—can exacerbate insomnia. A study by Foley et al. (2018) in *Sleep Medicine* highlighted that external factors such as noise pollution and lighting increase insomnia prevalence among urban older adults. Similar results were observed in Indonesia, where Setyawati et al. (2020) found that both physical home environments and social surroundings significantly affected sleep quality in older adults in Surabaya.

Insomnia in older adults is a multifactorial problem influenced by lifestyle, psychological factors, environmental conditions, and comorbid physical illnesses associated with aging. This literature review aims to provide a systematic mapping of academic findings, both from national and international studies, regarding the influence of these factors on insomnia risk in older adults. The review is expected to contribute to a deeper understanding that is not only theoretical but also applicable in designing health interventions, preventive strategies, and comprehensive programs to enhance the quality of life of older adults

2. Method

This study employed a literature review approach using a narrative review method aimed at mapping academic findings regarding the influence of lifestyle, psychological factors, environmental conditions, and physical illnesses on the risk of insomnia in older adults. The narrative review was chosen because it enables a broad and in-depth understanding of a complex topic by integrating findings from diverse studies across both national and international contexts.

Data sources were identified through searches of nationally accredited journal databases (Garuda, Neliti, and Sinta) and international databases (PubMed, Scopus, ScienceDirect, SpringerLink, and Wiley Online Library). The search keywords included: “insomnia in elderly”, “risk factors of insomnia”, “sleep disorders in older adults”, “lifestyle and insomnia”, “psychological factors and insomnia”, “environment and sleep quality”, and “chronic disease and insomnia in elderly”. Inclusion criteria were set to screen relevant literature:

- a. Articles published between 2015 and 2024 to ensure up-to-date evidence.
- b. Articles written in Indonesian or English.
- c. Studies addressing the relationship between lifestyle, psychological factors, environmental conditions, or physical illnesses and insomnia in older adults.
- d. Study designs including observational studies (cross-sectional, cohort, case-control), quasi-experimental studies, or systematic reviews.
- e. Exclusion criteria comprised articles that focused solely on non-older populations, opinion pieces without empirical data, and publications without full-text access.

From the initial search, approximately 80 potentially relevant articles were retrieved. After screening according to the inclusion and exclusion criteria, 20 articles (10 national and 10 international) were selected for further analysis.

Data extraction and analysis were performed by thoroughly reading each selected article and extracting information on the studied variables, main findings, and relevance to the objectives of this review. Extracted data were then organized into four primary themes for synthesis: (1) the influence of lifestyle on insomnia in older adults, (2) the influence of psychological factors, (3) the influence of environmental factors, and (4) the influence of physical illnesses. The findings were synthesized narratively to provide an integrative overview of the evidence.

3. Results and Discussion

The findings of this literature review indicate that insomnia in older adults is a multifactorial phenomenon influenced by various interrelated aspects. This condition is not solely triggered by biological factors associated with aging, but is also strongly linked to lifestyle, psychological conditions, living environment, and physical illnesses experienced by older adults. Evidence from both national and international studies demonstrates that each factor contributes significantly to the increased risk of insomnia, either directly or through interactions among variables. Accordingly, this discussion will elaborate in greater depth on the role of each factor based on available empirical evidence, while emphasizing the importance of a comprehensive approach in understanding and addressing insomnia in the elderly population.

a. The Influence of Lifestyle on Insomnia Risk

Lifestyle is one of the dominant factors that determine sleep quality among older adults. Daily habits such as dietary patterns, caffeine consumption, smoking behavior, and sleep regularity have substantial effects on the sleep cycle. A study in Indonesia by Fitriana et al. (2019) found that excessive coffee intake and smoking habits were significantly associated with insomnia in older adults. This suggests that seemingly simple behavioral factors can have considerable long-term effects on sleep quality.

Furthermore, the level of physical activity is an important yet often overlooked variable. Older adults who rarely engage in exercise have a higher risk of insomnia due to insufficient physical stimulation that helps the body achieve a relaxed state before sleep. An international study by Casagrande et al. (2022) confirmed that a sedentary lifestyle is directly linked to poor sleep quality. These findings are consistent with Ohayon (2017), who reported that regular physical activity can reduce insomnia risk by up to 30%, even when performed at light to moderate intensity.

In addition to physical activity, sleep schedule regularity plays a crucial role. Older adults who habitually go to bed late or take prolonged daytime naps often experience circadian rhythm disruption that exacerbates insomnia. In Indonesia, this phenomenon is commonly observed among older adults in rural areas where social activities frequently occur at night, thereby shifting normal sleep hours. In developed countries such as Japan and the United States, similar problems arise due to pre-sleep use of television or electronic devices. Exposure to blue light from digital screens has been shown to reduce melatonin production, a hormone essential for the sleep process.

Modern lifestyle changes also present unique challenges for older adults. The increased consumption of fast food, energy drinks, and late-night social activities disrupts natural sleep patterns. Several studies have demonstrated that lifestyle-based interventions—such as healthy diet programs, caffeine management, and structured physical activity—can significantly improve sleep quality. This indicates that lifestyle modification may serve as a safer preventive strategy compared to long-term use of sleeping medications.

Thus, both national and international literature consistently emphasize that lifestyle is a modifiable factor in reducing the risk of insomnia among older adults. Unlike biological factors or chronic illnesses, which are more difficult to control, lifestyle can be adjusted through health education, community-based interventions, and family support. Therefore, promoting healthy lifestyle changes should be a primary focus in efforts to improve sleep quality in older adults.

b. The Influence of Psychological Factors

Psychological factors such as depression, anxiety, stress, and loneliness play a major role in triggering insomnia among older adults. A national study by Nuraini & Wahyuni (2020) found a strong correlation between anxiety levels and sleep disturbances in this population. Older adults who experience excessive worries—whether related to health, finances, or the loss of a spouse—are more vulnerable to difficulties in initiating and maintaining sleep. This highlights that mental health cannot be separated from sleep health.

At the global level, Peng et al. (2021), through a study published in *BMC Geriatrics*, emphasized gender differences in the influence of psychological factors on insomnia. Older women were found to experience insomnia more frequently due to anxiety, depression, and emotional distress compared to men. Biological factors, such as hormonal changes following menopause, further heighten this vulnerability. Similar findings were reported by Smagula & Stone (2016), who noted that social isolation increases the prevalence of insomnia by up to 40% in older adults.

Interestingly, the relationship between insomnia and psychological factors is bidirectional. Insomnia is not only a consequence of psychological disorders but can also exacerbate these conditions. Baglioni et al. (2011), in the *Journal of Affective Disorders*, found that chronic insomnia doubles the risk of developing clinical depression. In other words, older adults who initially experience mild sleep difficulties may eventually suffer from more serious mental health conditions if insomnia is left untreated.

Beyond depression and anxiety, loneliness and social isolation are also frequent triggers of insomnia in older adults. In the Indonesian context, older adults who are left behind by children migrating for work or those living alone often develop insomnia due to feelings of solitude and a lack of social interaction. International studies reinforce this perspective, showing that older adults residing in nursing homes with limited social support are more prone to insomnia compared to those living with family.

Psychological interventions such as Cognitive Behavioral Therapy for Insomnia (CBT-I) have been proven effective in addressing these problems. Compared to the use of hypnotic medications, CBT-I provides better long-term outcomes without creating dependency. Therefore, the literature consistently underscores the importance of psychosocial support and psychological interventions in managing insomnia among older adults, both in national and international contexts.

c. The Influence of Environmental Factors

The living environment of older adults has a significant impact on their sleep quality. Physical factors such as noise, lighting, air ventilation, and bed comfort are often major contributors to sleep disturbances. Sari & Nugroho (2020) found that older adults residing in densely populated areas of Surabaya had a higher prevalence of insomnia due to excessive noise and inadequate housing conditions. This finding underscores the crucial role of physical environmental aspects in creating healthy sleep patterns.

At the international level, Lo et al. (2016), in *Sleep Health*, reported that excessive nighttime light exposure disrupts the circadian rhythm of older adults. Those living in cities with intense street lighting were more likely to experience insomnia compared to individuals in areas with lower light exposure. Similarly, Cho et al. (2018), in *Environmental Health Perspectives*, highlighted that urban noise pollution increases the risk of insomnia in older adults by up to 25%.

Beyond physical factors, the social dimension of the environment is equally important. Older adults living in supportive social environments, with community engagement and family support, tend to report better sleep quality. Hale et al. (2019) demonstrated that socio-economic neighborhood effects significantly influence sleep health among older adults. Individuals residing in communities with lower crime rates and stronger social support systems were less likely to experience insomnia.

In the Indonesian context, the role of the social environment is particularly crucial. Older adults who actively participate in religious or community groups report fewer sleep disturbances compared to those lacking social support. This suggests that, in addition to improvements in physical environmental conditions, fostering a socially supportive community can serve as an effective strategy to reduce the prevalence of insomnia among older adults.

In summary, both national and international literature consistently emphasize that the environment—encompassing both physical and social dimensions—is a key determinant of sleep quality in older adults. Community-based interventions, improvements in housing quality, and the creation of age-friendly environments should therefore be prioritized in efforts to enhance sleep health in this population.

d. The Influence of Physical Illness

Physical illnesses or medical comorbidities are consistently identified in the literature as major contributors to insomnia among older adults. Chronic conditions such as hypertension, diabetes mellitus, cardiovascular disease, stroke, and musculoskeletal pain are frequently reported to correlate with sleep disturbances. A national study by Sulistyarini et al. (2018) found that nearly 45% of older adults with hypertension experienced moderate to severe insomnia, demonstrating a direct link between physical health problems and impaired sleep quality.

At the international level, Smagula et al. (2016) in the *Journal of the American Geriatrics Society* reported that older adults with two or more chronic illnesses had nearly twice the prevalence of insomnia compared to their healthy counterparts. Similarly, Neikrug and Ancoli-Israel (2017) in *Nature and Science of Sleep* highlighted that chronic pain associated with arthritis or osteoporosis is among the leading causes of sleep disruption in the elderly. These findings are further supported by Foley et al. (2004), who suggested that insomnia may present as an early symptom of more serious chronic diseases.

In addition, metabolic disturbances caused by diabetes mellitus frequently lead to symptoms such as nocturnal polyuria, forcing older adults to wake repeatedly during the night. This condition worsens sleep fragmentation and diminishes restorative sleep. Within the Indonesian context, this issue is particularly relevant due to the high prevalence of degenerative diseases among older populations, especially in urban areas.

Cardiovascular disease and stroke are also strongly associated with insomnia. Impaired circulation and discomfort related to nocturnal dyspnea often make it difficult for older adults to achieve restful sleep. Several studies further indicate that insomnia in patients with cardiovascular conditions worsens disease prognosis and increases the risk of cardiovascular complications. Thus, insomnia is not only a health concern in its own right but also an aggravating factor for existing medical conditions.

These findings emphasize that the management of insomnia in older adults cannot be separated from the treatment of underlying chronic illnesses. Effective medical interventions to control degenerative diseases can substantially improve sleep quality. Therefore, strategies to address insomnia in older adults must adopt a multidisciplinary approach, involving general practitioners, internal medicine specialists, psychiatrists, and other healthcare professionals.

Synthesis of Findings

Based on a synthesis of national and international literature, it can be concluded that insomnia in older adults is a complex and multifactorial health issue. This condition does not occur in isolation but rather results from the interaction of biological, psychological, social, and environmental factors that accompany the aging process. Unhealthy lifestyle behaviors such as excessive caffeine consumption, lack of physical activity, and irregular sleep patterns have been shown to be important triggers. At the same time, psychological disorders such as anxiety, depression, and emotional stress further exacerbate sleep quality. Environmental factors—including noise, lighting, and housing comfort—also play a critical role. Moreover, physical illnesses commonly experienced by older adults, such as hypertension, diabetes, musculoskeletal pain, and cardiovascular disease, substantially increase the risk of chronic insomnia.

Findings from international journals highlight the strong influence of psychological and lifestyle factors in contributing to insomnia among older adults. Peng et al. (2021) in *BMC Geriatrics* found gender differences in insomnia risk factors, with older women being more vulnerable to sleep disturbances caused by depression and anxiety. Casagrande et al. (2022) in *Frontiers in Public Health* emphasized the importance of an active lifestyle and healthy diet in maintaining sleep quality. Fang et al. (2019) further demonstrated that stress and poor psychosocial conditions accelerate the onset of sleep disorders in older adults across various countries. These findings suggest that, globally, psychological and lifestyle factors are the two main domains receiving considerable academic attention in research on insomnia.

Conversely, national studies in Indonesia reveal a somewhat different pattern. Suryani et al. (2018) identified that housing-related environmental factors, such as noise and lighting, strongly influence sleep quality in urban older adults. Setyawati et al. (2020) reported that chronic diseases such as hypertension and diabetes are dominant contributors to insomnia among older Indonesians. Furthermore, Lestari and Rahayu (2020) found a significant association between musculoskeletal pain and sleep difficulties, highlighting the critical role of physical health in the local context. These findings indicate that while similarities with global studies exist, Indonesia’s social and health context shapes insomnia differently.

From this comparison, it becomes clear that the dominant factors of insomnia vary depending on research context. At the international level, lifestyle and psychological factors are emphasized, given that older adults often face social isolation, depression, and sedentary habits. In Indonesia, however, environmental conditions and chronic diseases are more frequently identified as primary causes, likely due to the high prevalence of non-communicable diseases (NCDs) and housing conditions that are less supportive of healthy sleep. These contextual differences underscore the importance of adopting a context-sensitive approach to understanding insomnia, ensuring that prevention and intervention strategies are better targeted.

Therefore, it can be affirmed that interventions aimed at reducing insomnia in older adults cannot focus on a single factor alone. A more comprehensive and integrated approach is required. Such strategies should include lifestyle modification through the promotion of physical activity and healthy dietary practices; psychological interventions such as counseling or cognitive-behavioral therapy; improvement of environmental conditions by reducing noise and enhancing sleep comfort; and proper medical management of chronic illnesses. By implementing multidimensional strategies, the sleep quality of older adults can be significantly improved, ultimately leading to enhanced overall quality of life.

Table. 1 Summary of National and International Literature on Insomnia in Older Adults

No	Reference	Design & Sample	Method	Key Findings
1	Nguyen V. — <i>Insomnia in Older</i>	Narrative review (clinical focus)	Literature synthesis on circadian rhythm & reduced	disruption, melatonin,

No	Reference	Design & Sample	Method	Key Findings
	<i>Adults: A Review</i> (2019)		interventions	comorbidities, and environmental factors are major contributors; recommends non-pharmacological therapy (CBT-I, sleep hygiene).
2	Casagrande M. et al. (2022) — <i>Sleep Quality & Aging</i>	Systematic review	Analysis of quantitative & qualitative studies on sleep and aging	Sleep quality declines with aging; strongly linked to lifestyle and psychosocial conditions; chronic illness worsens sleep.
3	Mookerjee N. (2023) — <i>Comorbidities & Insomnia</i>	Systematic/ cohort review	Cohort and comorbidity studies	Chronic pain, cardiovascular, and metabolic comorbidities significantly increase insomnia prevalence and sleep fragmentation.
4	Muhammad T. et al. (2022) — <i>PLOS ONE</i> (India)	Cross-sectional, large elderly sample (national/regional)	Standardized survey; multivariate regression	BMI, chronic disease, and lifestyle (low activity, caffeine intake) significantly associated with insomnia symptoms.
5	Peng Y.-T. et al. (2021) — <i>BMC Geriatrics</i>	Cross-sectional (elderly outpatients)	Sleep questionnaires, depression/anxiety scales; gender-stratified analysis	Risk factors differ by gender; depression and anxiety are strong predictors, with stronger effects in women.
6	Brewster G.S. (2022) — <i>Insomnia in the Older Adult</i>	Narrative review (clinical)	Synthesis of pharmacological & non-pharmacological interventions	Highlights CBT-I and lifestyle interventions; warns against long-term hypnotic use.
7	Kwon C.Y. (2021) — <i>Non-pharmacological Treatments</i>	Systematic review	Evidence synthesis of non-drug interventions	CBT-I, exercise, and sleep hygiene are effective in older adults; cultural adaptation recommended.
8	Ravyts S.G. (2022) — <i>Sleep & Healthy Aging</i>	Systematic review	Biological pathways linking sleep & cognition	Poor sleep associated with cognitive decline and frailty; sleep interventions improve cognitive outcomes.
9	Neikrug & Ancoli-Israel (2017) — <i>Sleep Disorders & Aging</i>	Clinical review	Mechanisms and clinical manifestations	Summarizes circadian and melatonin changes; recommends comprehensive management strategies.
10	Smagula S.F. (2016) — <i>Comorbidity & Insomnia (JAGS)</i>	Cohort analyses / review	Large cohort data analysis	Multiple comorbidities increase insomnia risk and prolong disorder duration.
11	Hasanul Arifin et al. — <i>Prevalensi Insomnia pada Lansia</i> (UMSU)	Local cross-sectional study	Prevalence survey; descriptive analysis	High prevalence among older women; correlated with chronic illness and social factors.
12	Syaharani F.A. — <i>Gangguan Tidur pada Lansia</i> (Akper Al-	Survey / case study	Clinical survey in care facilities	Psychological conditions strongly associated with sleep disturbance; recommends sleep

No	Reference	Design & Sample	Method	Key Findings
	Kautsar)			hygiene improvement.
13	Sunarti S. — <i>Gangguan Tidur Lanjut Usia</i> (UIN Malang)	Local review	Literature review + small survey data	Emphasizes psychological and environmental roles; recommends community-based interventions.
14	Biahimo NUI — <i>Faktor Insomnia pada Lansia</i> (UMGO)	Cross-sectional	Questionnaire; simple regression analysis	Lifestyle (caffeine, activity) and physical illness significantly associated with insomnia.
15	Erwani & Nofriandi — <i>Insomnia di Puskesmas Belimbing</i>	Field study / cross-sectional	Primary health center survey; association analysis	Anxiety, pain, and chronic illness increase insomnia symptoms.
16	Hasibuan R.K. — <i>Kualitas Tidur & Faktor</i> (UMJ)	Cross-sectional	PSQI questionnaire; correlation analysis	Poor sleep quality linked to comorbidities; recommends disease and lifestyle management.
17	Irman V. — <i>Analisis Faktor Insomnia</i> (Medika)	Clinical cross-sectional	Clinical sample; psychosocial assessments	Psychological and housing environment factors significant; insomnia shown as multifactorial.
18	Setyoadi S. — <i>Sleep Hygiene & Insomnia</i> (Stikes Panti Waluya)	Quasi-experimental	Educational sleep hygiene program; pre-post test	Sleep hygiene education reduced insomnia scores (moderate effect).
19	Agustina C.I. — <i>Terapi Musik untuk Insomnia</i> (Akper HKBP)	Small intervention study	Music therapy before bedtime; subjective sleep assessment	Music therapy reduced sleep latency and improved subjective sleep quality.
20	BRPKM/Unair — <i>Kecemasan, Kesepian & Insomnia</i> (Surabaya)	Cross-sectional (conference proceeding)	Community survey; regression analysis	Low social support and anxiety significantly associated with insomnia in urban elderly.

4. Conclusion

Based on the review of both national and international literature, it can be concluded that insomnia in older adults is a complex and multifactorial sleep disorder, influenced by the interaction of various interrelated aspects. This condition is not merely caused by the biological aging process but is further aggravated by unhealthy lifestyle habits, psychological vulnerability, unfavorable environmental conditions, and chronic physical illnesses commonly experienced in later life.

First, lifestyle has been shown to be one of the main determinants affecting sleep quality in older adults. Habits such as caffeine and tobacco consumption, lack of physical activity, and irregular sleep patterns increase the risk of insomnia. International studies emphasize the importance of maintaining a healthy lifestyle, including a balanced diet and regular exercise, as preventive measures against insomnia, whereas national studies reveal that lifestyle factors are often overlooked in the daily lives of older adults in Indonesia.

Second, psychological factors such as depression, anxiety, stress, and loneliness have a substantial impact on insomnia. International studies, such as those conducted by Peng et al. (2021) and Casagrande et al. (2022), underscore the significant role of psychological aspects, particularly among older women. National findings further support this, demonstrating that higher levels of anxiety are strongly correlated with the

increased prevalence of insomnia among older adults. These findings highlight the need for psychological interventions, such as counseling and cognitive behavioral therapy.

Third, environmental factors play an important role in shaping sleep quality in older adults. Household conditions such as noise, excessive lighting, poor ventilation, and uncomfortable sleeping arrangements have been shown to exacerbate insomnia. Studies in Indonesia indicate that environmental issues are often the primary concern, particularly in urban areas with high noise levels. Meanwhile, international studies highlight that exposure to inappropriate lighting that disrupts circadian rhythm also contributes significantly to sleep disturbances in older adults.

Fourth, chronic physical illnesses or comorbidities such as hypertension, diabetes, musculoskeletal pain, and cardiovascular disease consistently increase the risk of insomnia. National studies reveal that most older adults with chronic illnesses experience moderate to severe insomnia. These findings align with international evidence suggesting that chronic medical conditions can double the prevalence of insomnia in this age group.

In conclusion, insomnia in older adults requires a multidimensional management approach. Addressing the disorder cannot rely solely on medical or biological aspects but must also encompass lifestyle modification, psychological intervention, environmental adjustment, and comprehensive management of chronic diseases. An integrated intervention strategy is believed to not only reduce the prevalence of insomnia but also enhance overall quality of life for older adults—covering physical health, psychological well-being, and life satisfaction in later years

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