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Effect of Suja (Ginger Milk) Consumption on Sleep Quality in Children with Acute Upper Respiratory Tract Infection

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ABSTRACT

Introduction : Upper Respiratory Tract Infection (URTI) in children often causes sleep quality disturbances due to coughing and shortness of breath. Persistent sleep disturbances can inhibit the recovery process and reduce immune function. One nonpharmacological therapy that can be used is the consumption of ginger milk, which has calming and anti - inflammatory effects and may improve sleep quality in children with URTI.
Objective: To analyze the effect of *suja* (ginger milk) consumption on improving sleep quality among children with Upper Respiratory Tract Infection (URTI) in the working area of Kedaton Community Health Center, Bandar Lampung, in 2026.
Method: This study employed a quantitative method with a pre-experimental one-group pre-test, post-test design. The research was conducted in the working area of Kedaton Public Health Center, Bandar Lampung City, in 2026, involving 28 children with URTI. Sleep quality was measured before and after the ginger milk intervention using a sleep quality questionnaire, and the data were analyzed bivariately using a paired samples test.
Result The results showed that prior to the intervention, most respondents had poor sleep quality, while after ginger milk consumption, an improvement in sleep quality was observed. Bivariate analysis indicated a significant effect of ginger milk consumption on the sleep quality of children with URTI, with a p-value of 0.000 < 0.05. Ginger milk can be used as a complementary nonpharmacological therapy in nursing care for children with URTI.
Conclusion: It is recommended that healthcare providers educate parents about the importance of sleep quality in children with URTI and introduce ginger milk as a supportive nonpharmacological therapy.

Keywords: children, ginger milk, sleep quality, upper respiratory tract infection (URTI)

Introduction

Upper Respiratory Tract Infections (URTIs) are a leading cause of morbidity and mortality in Indonesia. URTIs are infectious diseases that affect the upper and lower respiratory tract and can lead to serious complications such as pneumonia if not properly treated (Nurhayati et al., 2025). According to the World Health Organization (WHO) (2021), URTIs are dangerous respiratory diseases and can even become epidemics and pandemics. This is because they are easily transmitted through droplets produced by coughing and sneezing (Kusumawati et al., 2024).

According to the World Health Organization (WHO), in 2020, there were an estimated 1,988 cases of URTIs in children, with a prevalence of 42.91%. ARI is one of the most common illnesses in developing countries and is the leading cause of patient visits to healthcare facilities, accounting for approximately 40%-60% of visits to community health centers (Puskesmas) and 15%-30% of visits to hospitals. UNICEF (2022) also states that globally, there are more than 1,400 cases of ARI per 100,000 children annually.

According to data from the Indonesian Ministry of Health, Upper Respiratory Tract Infections (URTIs) account for approximately 30-40% of all illnesses experienced by children in Indonesia. According to the 2023 Indonesian Health Survey (SKI), the prevalence of URTIs in Lampung Province was recorded at 1.9%. By age, children are the age group most affected by URTIs, accounting for 4.9%.

According to the Indonesian Health Profile (2020), there were more than 7.6 million cases of URTIs in children. Lampung Province was one of the provinces with a high incidence of acute respiratory infections (ARI) in 2023, with 417,100 cases recorded, a sharp increase from the previous year. North Lampung Regency, Pesawaran Regency, and Bandar Lampung City were the areas with the highest number of cases (Sutopo et al., 2025).

ARI generally resolves on its own, but it remains important to pay attention due to its high prevalence and association with antibiotic use. Lack of sleep is often thought to increase a person's risk of infection. Poor sleep quality can potentially increase the likelihood of catching a cold or flu, so most people are recommended to get around 8 hours of sleep per night (Robinson et al., 2021). Children are recommended to get around 10 hours of sleep per night. Adequate sleep is crucial for supporting physical growth, brain development, concentration in learning, and maintaining emotional health (Hablaini et al., 2020).

ARI treatment can be carried out through two approaches: pharmacological and non-pharmacological measures. Pharmacological approaches include administering antibiotics, antipyretics, and analgesics such as ibuprofen or paracetamol to help manage fever. In children, this therapy can be combined with supplemental oxygen to maintain optimal blood oxygen levels (Pratiwi & Christiani, 2025).

Meanwhile, non-pharmacological approaches also play a crucial role in aiding the recovery process. Some methods that can be applied include warm compresses, pandan leaves, olive oil, and compresses with boiled red ginger (Andora & Haryanti, 2021). Furthermore, the use of natural ingredients such as ginger and milk can also be a safe and effective alternative to help relieve symptoms of respiratory disorders caused by acute respiratory infections (ARI) (Kirana et al., 2024).

Milk contains nutrients such as tryptophan and calcium, which can help the body relax, making it easier to fall asleep. Consuming milk, especially at night, can help someone experiencing difficulty sleeping fall asleep more quickly and achieve better quality sleep. This effect also plays a crucial role in the body's recovery process, especially for individuals

experiencing illnesses such as acute respiratory infections (ARI), as good quality sleep can accelerate the healing process (Qullana, 2022).

The active compounds in ginger, such as zingiberene and zingiberol, have a natural relaxing effect on the body. When consumed as a decoction or warm drink, these compounds can help promote a sense of calm, reduce muscle tension, and provide a calming effect that makes it easier to fall asleep and improves sleep quality (Aji & Yektiningtyastuti, 2024).

Based on the results of a pre-survey conducted in the Kedaton Community Health Center in Bandar Lampung City on October 17, 2025, among 15 parents or guardians of respondents with acute respiratory infections (ARI), it was found that 10 respondents still frequently experienced coughing and shortness of breath for more than three days, especially during cold weather or seasonal changes. Meanwhile, the other 5 respondents reported rarely experiencing these symptoms due to their adherence to clean and healthy living practices (PHBS). Furthermore, several respondents also complained of difficulty sleeping due to persistent coughing and tended to only take antibiotics prescribed by their doctor.

This situation highlights the need for non-pharmacological alternatives to help reduce ARI symptoms and improve sleep quality. Ginger (Zingiber officinale) and milk are known to have various health benefits. Ginger has anti-inflammatory effects and can help soothe the respiratory tract, while milk contains nutrients that can provide a calming effect and help improve sleep quality. The combination of the two in the form of ginger milk has the potential to provide a synergistic effect in improving sleep quality in ARI patients. However, research on the effect of ginger milk consumption on sleep quality in patients with acute respiratory infections (ARI) is still limited, so further research is needed to prove its effectiveness.

Based on this description, it is clear that acute respiratory infections (ARI) remain a major health problem in Indonesia, with high incidence and mortality rates, especially among children. Furthermore, poor sleep quality has been shown to be associated with an increased risk of infection, including acute respiratory infections (ARI). Several previous studies have also shown that natural ingredients such as ginger and honey have the potential to improve sleep quality and relieve symptoms of acute respiratory infections (ARI). Similarly, milk consumption has long been known to have a positive effect on sleep through its tryptophan and other bioactive components. However, research specifically examining the combination of milk and ginger on sleep quality in patients with acute respiratory infections (ARI) is still very limited. Therefore, the author is interested in conducting a study entitled "The Effect of Ginger Milk Consumption on Sleep Quality in Patients with Acute Respiratory Infections" as an effort to explore simple, safe, and easy-to-implement non-pharmacological therapies to improve sleep quality in patients with acute respiratory infections (ARI).

Objective

To analyze the effect of *suja* (ginger milk) consumption on improving sleep quality among children with Upper Respiratory Tract Infection (URTI) in the working area of Kedaton Community Health Center, Bandar Lampung, in 2026.

Method

This study used a quantitative experimental design using a one-group pretest-posttest approach. In this design, researchers first measured the sleep quality of children with ARI (pretest). They were then given an intervention in the form of consuming suja (ginger milk). After the intervention period was completed, researchers remeasured sleep quality

(posttest). This design aimed to assess the effect of consuming suja (ginger milk) on the sleep quality of children with ARI.

The instrument used to measure sleep quality in this study was the Children's Sleep Habits Questionnaire (CSHQ), a questionnaire completed by parents to assess the sleep habits and problems of children aged 4–10 years over the past week. The CSHQ consists of eight components, including bedtime resistance, delayed sleep onset, sleep duration, sleep-related anxiety, nighttime awakenings, parasomnias, sleep-disordered breathing, and daytime sleepiness. Each item is scored on a scale of 0–2, with a score of 0 indicating rarely, a score of 1 indicating sometimes, and a score of 2 indicating always. The score for each component is obtained by summing the scores of the items included in it, then all component scores are added together to obtain the total CSHQ score. A higher total score indicates more or more severe sleep problems experienced by the child, while a lower score indicates better quality and sleep habits.

This study employed a quantitative method with a pre-experimental one-group pre-test–post-test design. The research was conducted in the working area of Kedaton Public Health Center, Bandar Lampung City, in 2026, involving 28 children with URTI. Sleep quality was measured before and after the ginger milk intervention using a sleep quality questionnaire, and the data were analyzed bivariately using a paired samples test.

Result

Table 1. Frequency Distribution of Respondent Characteristics

Respondent Characteristics	Category	Number	
		Frequency (n)	Percentage (%)
Ages	4	6	21
	5	1	4
	6	10	36
	7	3	11
	8	1	4
	9	5	18
	10	2	7
Gender	Male	13	46
	Female	15	54
Education	Not in school	3	11
	Kindergarten	4	14
	Elementary School	21	75
Total		**28**	**100**

Table 1 shows the distribution of characteristics of respondents suffering from Upper Respiratory Tract Infections (URTIs) based on age, gender, and education level. The number of respondents in this study was 28 children. Based on age, the majority of respondents were 5 years old (10 children (36%), followed by 9 years old (5 children) (18%). Respondents aged 4 and 7 years old (6 children (21%) and 3 children (11%), respectively, while 8 and 10 years old were the smallest groups, with 1 child (4%) and 3 children (11%), respectively.

In terms of gender, there were more female respondents than male respondents, at 15 children (54%), while there were 13 male respondents (46%). Based on education level, the

majority of respondents were in elementary school (21 children (75%), while 4 children (14%) had attended kindergarten (TK), and 3 children (11%) had not yet attended school.

Table 2. Frequency Distribution of Children's Sleep Quality Before Intervention

Children's Sleep Quality	N	Mean	Minimum	Maximum	Standard Deviation
Before SUJA	28	42.93	34	55	6.537

Based on Table above Frequency Distribution of Children's Sleep Quality Before Intervention, there were 28 respondents. The mean score for children's sleep quality before the ginger milk intervention was 42.93, with a minimum score of 34 and a maximum score of 55. The standard deviation was 6.537, indicating variation in sleep quality scores among respondents.

Table 3. Frequency Distribution of Children's Sleep Quality After the Intervention

Children's Sleep Quality	N	Mean	Minimum	Maximum	Standard Deviation
After SUJA	28	20.65	11	32	5.244

Based on Table above Frequency Distribution of Children's Sleep Quality After the Intervention, there were 28 respondents. The mean score for children's sleep quality after the ginger milk consumption intervention was 20.65, with a minimum score of 11 and a maximum score of 32. The standard deviation of 5.244 indicates that the variation in sleep quality scores among respondents after the intervention was relatively smaller than before the intervention.

Table 4.Effect of Ginger Milk on Sleep Quality in Children with ARI

Variable	Mean	T	Df	*p-value*
Results before and after intervention	22,286	25,148	27	0.00

Table above shows the results of a bivariate analysis to determine the effect of ginger milk on sleep quality in children with ARI. The mean difference between sleep quality before and after the intervention was 22.286. The statistical test results showed a t-value of 25.148 with 27 degrees of freedom (df) and a p-value of 0.000 ($p < 0.05$), indicating a statistically significant difference between children's sleep quality before and after the ginger milk intervention. Therefore, it can be concluded that ginger milk significantly improves sleep quality in children with ARI.

Discussion

The characteristics of the respondents in this study indicate that ARI cases are more common among early school-age children. These results align with research conducted by Musfirah (2023) on the incidence of ARI in children under 12 years of age in the Sebengkok Community Health Center (Puskesmas) in Tarakan City. This study found that school-age children are at high risk of ARI due to increased social interaction and exposure to the outdoor environment, which increases the chance of transmitting respiratory infections (Musfirah & Kamisa, 2023).

These research findings reinforce the findings of this study, which suggest that early school-age children are a vulnerable group for ARI. Epidemiologically, increased social

interaction is directly proportional to the increased risk of transmitting respiratory infections. The school environment, which involves many individuals in a single, enclosed space, facilitates the spread of microorganisms through the air and droplets, especially when a child is coughing or has a cold.

The researchers' assumption regarding these results is that the high incidence of ARI in children aged 6-9 years is influenced not only by biological factors such as an immature immune system, but also by behavioral and environmental factors. Children at this age are highly curious and physically active, often interacting without paying attention to personal hygiene. Furthermore, parental supervision becomes more limited as children begin spending more time at school. This situation increases the chance of exposure to microorganisms that cause acute respiratory infections (ARI). Therefore, promotive and preventive efforts are needed through health education from school age, instilling clean and healthy lifestyle habits, and school support in creating a healthy learning environment to reduce the incidence of acute respiratory infections (ARI) in early school-age children.

The reduction in coughing symptoms contributes to increased child comfort, which indirectly improves sleep quality through reduced sleep disturbances at night. This aligns with the concept that good sleep quality is characterized by restful sleep that restores the body's energy, thus supporting health and well-being and leaving individuals feeling refreshed upon awakening. While difficulty sleeping can lead to sleep disorders that require appropriate treatment (Rayanti et al., 2024).

Ginger (Zingiber officinale) is an herbal plant that has long been used as an alternative therapy due to its various therapeutic benefits. Reduced pain and muscle tension after administering ginger can increase feelings of comfort, making it easier for individuals to rest and sleep more soundly. A more relaxed and pain-free body plays a crucial role in improving sleep quality (Rizqi et al., 2023).

Another study by Jovani (2025) reported that administering a ginger and honey infusion significantly reduced the incidence of respiratory infections (ARI) in toddlers. Improved respiratory conditions after this herbal intervention enabled children to sleep more soundly and reduced sleep disturbances caused by respiratory symptoms. These findings support the results of a recent study showing improved sleep quality in children after administering ginger milk (Jovani et al., 2025).

Research conducted by Susilowati (2022) also reported that administering ginger and honey extract to pediatric patients with ARI significantly reduced the frequency of nighttime coughing and reduced sleep disturbances experienced by respondents. This reduction in nighttime coughing symptoms provides an opportunity for children to experience better sleep, as coughing is one of the factors that disrupts sleep in children with ARI. This study supports the finding that herbal interventions such as ginger and honey create more comfortable breathing conditions at night, thereby improving children's sleep patterns (Susilowati et al., 2022).

Furthermore, another study by Suomokil (2023) showed that administering a red ginger herbal infusion combined with honey to toddlers with acute respiratory infections (ARI) significantly reduced the severity of ARI symptoms, particularly nighttime coughing, which resulted in reduced sleep disturbances. Improved respiratory function after this intervention subsequently allowed children to sleep longer and more regularly without awakening due to coughing or mild shortness of breath at night. These findings suggest that functional foods based on ginger and honey can be used as a complementary therapy to improve sleep quality in early childhood ARI patients (Yerry Soumokil & Herlin Sinai, 2023).

Furthermore, ginger is also known to possess anti-inflammatory properties derived from its active compounds, such as gingerol and shogaol. Fransiska (2022) stated that ginger plays a role in reducing inflammation and irritation, including in the respiratory tract. This anti-inflammatory effect can reduce discomfort experienced by children during sleep, thereby increasing physiological comfort during nighttime rest and contributing to improved sleep quality (Fransiska et al., 2022).

According to researchers, the improved sleep quality of children with acute respiratory infections (ARI) after being given ginger milk is influenced by a reduction in uncomfortable symptoms, such as coughing, nasal congestion, and mild respiratory distress, which often occur, especially at night. These symptoms are the main factors causing children to wake up frequently during sleep, have difficulty falling asleep, and experience decreased sleep duration and quality. When ARI symptoms are reduced, children tend to find it easier to maintain deeper and more stable sleep phases, resulting in improved sleep quality.

Ginger's anti-inflammatory and expectorant properties are thought to play a role in helping reduce inflammation in the respiratory tract and facilitate mucus expulsion. Active compounds in ginger, such as gingerol and shogaol, are known to have pharmacological effects that can help clear the airways and reduce throat irritation. Furthermore, the warm sensation produced by consuming ginger milk has a relaxing effect on the child's body, helping to create a sense of comfort and reduce the stress response caused by physical discomfort experienced during illness.

The warming effect of ginger milk is also thought to contribute to muscle and nervous system relaxation, which plays a crucial role in the sleep process. A more relaxed body allows children to enter non-REM sleep more quickly and maintain sleep without frequent awakenings. Furthermore, the feeling of comfort that arises after consuming ginger milk can increase a child's psychological calm, thereby reducing the restlessness or fussiness that often occurs in children with ARI at night.

Improved sleep quality is also associated with increased sleep duration. Children who are not disturbed by coughing or shortness of breath tend to have longer and more continuous sleep. Adequate, quality sleep is crucial for children because it plays a role in supporting the body's recovery process, strengthening the immune system, and accelerating the healing process of infections. Therefore, improving sleep quality not only impacts the child's comfort but also positively contributes to the overall healing process of ARI.

Based on these results, administering ginger milk can be considered a safe, easy-to-implement, and relatively affordable non-pharmacological intervention to help improve the sleep quality of children with ARI. This intervention can be used as a complementary therapy alongside medical treatment, particularly to help reduce nighttime complaints that often disrupt children's sleep patterns. Therefore, the findings of this study strengthen the assumption that ginger milk has potential benefits in improving the sleep quality of children with ARI through mechanisms such as improving respiratory symptoms and increasing physical comfort during sleep.

Conclusion

Based on 28 respondents, the majority of children with ARI (10 children) were 6 years old (36%), followed by 5 children aged 9 years (18%), 3 children aged 7 years (11%), 2 children aged 10 years (7%), and 1 child each aged 4, 5, and 8 years (4%). There were 15 female respondents (54%) and 13 male respondents (46%). Most were in elementary school (21 children) (75%), 4 children were in kindergarten (14%), and 3 children were not yet in school

(11%). These data indicate that ARI is more common among elementary school-aged children, with a relatively balanced gender distribution.

The sleep quality of children with ARI before the ginger milk intervention was categorized as poor, with an average score of 42.93. After the ginger milk intervention, the children's sleep quality improved, with the average score decreasing to 20.65.

There is a statistically significant difference between sleep quality before and after the ginger milk consumption intervention (p-value = 0.000; $p < 0.05$), which shows that ginger milk consumption has a significant effect on improving the sleep quality of children with ARI.

Conflict of Interest

No declare.

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Ethical consideration

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Authors' contribution

Each author contributed equally in all the parts of the research. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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