# Implementation of Sleep Hygiene to Improve Sleep Quality among Adolescents at the Maccini Public Health Center

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## ABSTRACT

**Introduction**: Sleep is a natural necessity for all living creatures, including humans, to restore both body and mind. It is a physiological state marked by reduced consciousness, muscle activity, and responsiveness to the external environment.
**Objective**: To evaluate the sleep quality improvement among adolescents experiencing sleep disorders.
**Method**: This study used a descriptive case study approach with adolescents who reported sleep disorders. Inclusion criteria included adolescents who were willing to participate, while exclusion criteria excluded those with insomnia.
**Results**: The implementation of sleep hygiene over four consecutive days for two respondents resulted in an improvement in sleep quality.
**Conclusion**: Sleep hygiene is effective in improving sleep quality in adolescents.

**Keywords:** adolescents, sleep hygiene, sleep disorders, sleep quality

## Introduction

Sleep is an important part of adolescent physical growth and intellectual development (Kieckhefer, Ward, Tsai, & Lentz, 2008). It provides calmness, restores energy, revitalizes brain and body functions, and supports survival (Kozier, 2011). Adolescents require 8 to 10 hours of sleep each night to prevent unnecessary fatigue and susceptibility to infections (Kozier, 2011; The National Sleep Foundation (NSF), 2015).

Sleep quality is crucial for adolescents' physical growth and development (Rahmawati, 2020). Various factors influence sleep quality in adolescents, such as age, class, daily activities, and lifestyle. Additionally, sleep needs vary by age, with sleep duration typically decreasing as

activity levels increase (Purnama, 2019). Gender differences also play a role in sleep quality, influenced by physiological and psychological factors (Nazhira Rahma et al., 2023).

When adolescents do not meet their sleep needs, it can affect their concentration, decision-making, and daily activities (Wiyandini et al., 2018). Sleep deprivation leads to sleepiness and fatigue, disrupting the learning process (Manalur A.R.N, Berbasari Er, 2012). Poor sleep quality can hinder concentration and needs serious attention (Nilifda H, Nadjmir, 2016).

Addressing the decline in sleep quality among adolescents requires immediate action, including pharmacological or non-pharmacological therapies. Sleep hygiene is one effective non-pharmacological intervention to improve sleep quality and minimize the need for pharmacological treatments (Potter and Perry, 2009). Encouraging better sleep habits, such as maintaining a consistent bedtime, can foster discipline and enhance the application of sleep hygiene.

Sleep hygiene is a series of behaviors and environmental factors that significantly influence sleep quality improvement (Zurlva et al., 2022). It is an education provided to individuals to improve their sleep patterns, such as limiting daytime naps, avoiding late-night meals, reducing mobile phone use before sleep, and cutting down on caffeine consumption or smoking (Rositianti, Mamat, Lurkman, & Yurlianita, 2024). Sleep hygiene is crucial for promoting good sleep quality and adequate sleep duration, which helps improve daytime concentration (Tgsih, Niningiala et al., 2022). The lack of sleep hygiene can affect adolescents' concentration, leading to difficulties in daily activities due to sleepiness and fatigue, disrupting the learning process at school (Rini & Tamar, 2023).

According to research (Ichsan & Sursanti, 2019), many adolescents experience poor sleep (less than 6.5 hours of sleep per night). Factors such as age, gender, and height are related to this, with adolescents facing sleep difficulties showing an increase in systolic blood pressure (by 4 + 1.2 mmHg) compared to other adolescents. This study, conducted at Gunung Sari High School in August 2019, included 45 students, with 20 respondents experiencing insomnia.

Adolescence is a transitional period from childhood to adulthood, accompanied by various physical, psychological, emotional, and social changes (Ali & Asrori, 2012). During this period, adolescents face numerous challenges from their expanding environment, including school, community, and religious activities. These activities can be exhausting, making adequate sleep crucial for maintaining health and well-being. Sleep is a universal need for all individuals to restore energy and promote proper function (Kozier, 2019).

Due to the complexity and numerous activities during adolescence, many adolescents experience poor sleep quality, negatively impacting their physiological and psychological health. Physiologically, poor sleep leads to fatigue, while psychologically, it can result in emotional instability, decreased self-confidence, and carelessness. Sleep quality consists of two aspects: quantitative (duration of sleep) and qualitative (latency and completeness) (Wicaksono et al., 2019). Based on these findings, the authors are interested in researching the implementation of sleep hygiene to improve sleep quality in adolescents.

**Objective**

To evaluate the sleep quality improvement among adolescents experiencing sleep disorders.

**Method**

The type of research used is quantitative research with a cross-sectional research design. The aim is to observe the relationship between sleep hygiene behaviors and adolescent sleep disorders through assessment. This study was conducted in the working area of the Maccini Sawah Health Center in Makassar. The study took place over 4 days, from Monday, June 24, 2024, to Friday, June 28, 2024. Respondents were two adolescent patients at the high school level experiencing sleep difficulties. The instrument used was the PSQI (Pittsburgh Sleep Quality Index) questionnaire, which consists of 9 questions with a scoring system: 0 (Very good), 1 (Fairly good), 2 (Somewhat bad), and 3 (Very bad). Data collection methods included interviews, observations, and documentation. Observations were conducted after explaining the purpose of the case study and obtaining consent from both the parents and the respondents.

**Result**

Table 1. Results of Sleep Hygiene Implementation on Ms. A

| Parameters | Pre | | | | Post | | | |
|---|---|---|---|---|---|---|---|---|
| | P1 | P2 | P3 | P4 | P1 | P2 | P3 | P4 |
| Sleep Quality | 3 | 3 | 2 | 1 | 3 | 2 | 1 | 0 |
| Sleep Latency | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sleep Duration | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 1 |
| Sleep Efficiency | 3 | 2 | 1 | 0 | 2 | 1 | 0 | 0 |
| Sleep Disorders | 3 | 3 | 2 | 1 | 3 | 2 | 2 | 1 |
| Medication Use | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daytime Dysfunction | 3 | 2 | 2 | 1 | 2 | 2 | 1 | 0 |
| Total Scores | 15 | 13 | 9 | 5 | 13 | 9 | 6 | 2 |
| Description | Bad | Bad | Bad | Good | Bad | Bad | Bad | Good |

Table 1. Results of Sleep Hygiene Implementation on Ms. Y

| Parameters | Pre | | | | Post | | | |
|---|---|---|---|---|---|---|---|---|
| | P1 | P2 | P3 | P4 | P1 | P2 | P3 | P4 |
| Sleep Quality | 2 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| Sleep Latency | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sleep Duration | 3 | 3 | 2 | 1 | 3 | 2 | 1 | 1 |
| Sleep Efficiency | 3 | 2 | 2 | 1 | 2 | 2 | 2 | 0 |
| Sleep Disorders | 3 | 2 | 1 | 1 | 3 | 1 | 1 | 1 |
| Medication Use | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daytime Dysfunction | 3 | 2 | 1 | 1 | 2 | 2 | 1 | 0 |
| Total Scores | 14 | 11 | 9 | 7 | 11 | 9 | 7 | 5 |
| Description | Bad | Bad | Bad | Good | Bad | Bad | Good | Good |

**Discussion**

This case study examines the implementation of sleep hygiene therapy for adolescents in an effort to improve sleep quality. The intervention was administered to two respondents experiencing sleep disorders within the Maccini Sawah Community Health Centre area, Makassar City. The respondents included Respondent I (Miss 'Y') and Respondent II (Miss 'A'). Sleep hygiene therapy was provided over 4 days, from June 24 to 28, 2024, during which both patients exhibited sleep disturbances.

To assess the success of the sleep hygiene intervention, a case study instrument was used, specifically a questionnaire administered both pre- and post-intervention. The questionnaire evaluated seven aspects: sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, drug use, and daytime dysfunction.

On June 24, 2024, the first day of sleep hygiene implementation, Respondent I (Miss 'Y') showed that before the intervention, her sleep quality score was 2 (rather poor), and post-intervention, the score improved to 1 (quite good). The sleep latency score remained 0 (very good) both pre- and post-action. Regarding sleep duration, the score before implementation was 3 (very poor), which remained at the same level after the intervention. Sleep efficiency before the intervention was scored at 3 (very poor), improving to 2 (rather poor) after the intervention. Sleep disturbances were scored at 3 (very poor) both pre- and post-intervention.

Regarding drug use, both pre- and post-intervention scores were 0 (very good). Daytime dysfunction was scored at 3 (very poor) before the intervention and improved to 0 (very good) after the intervention. Based on these results, it can be concluded that, on Day 1 of the sleep hygiene intervention, the overall score before the action was 14, indicating poor results, while the post-intervention score was 11, still reflecting poor outcomes.

For Respondent II, Miss "A," the pre-intervention sleep quality score was 3 (very bad), and post-intervention, the score remained 3 (very bad). Sleep latency scores were 0 (very good) both pre- and post-action. The sleep duration score was 3 (very bad) before and after the intervention. Sleep efficiency was 3 (very bad) before the intervention and improved to 2 (rather bad) after. Sleep disturbance was scored 3 (very bad) both pre- and post-action. Drug use was 0 (very good) pre- and post-intervention. Daytime function was scored 3 (very bad) before and improved to 2 (rather bad) post-intervention. The overall score on Day 1 before the action was 15 (indicating poor sleep quality) and post-action was 13 (still poor).

On June 25, 2024, the second day of the intervention, for Respondent I, Miss "Y," the pre- and post-intervention sleep quality scores were 2 (rather bad). The sleep latency score remained 0 (very good) before and after the intervention. Sleep duration was 3 (very bad) pre-intervention and improved to 2 (rather bad) post-intervention. Sleep efficiency scores were 2 (rather bad) both pre- and post-action. Sleep disturbance scores were 2 (rather bad) pre-intervention and improved to 1 (quite good) post-intervention. Drug use remained 0 (very good) both pre- and post-action. Daytime function was rated 2 (rather bad) both pre- and post-action. On Day 2, the overall score before the intervention was 11 (poor) and post-intervention was 9 (still poor).

For Respondent II, Ms. "A", the pre-intervention sleep quality score was 3 (very bad), and post-intervention it improved to 2 (rather bad). The sleep latency score remained 0 (very good) both pre- and post-action. The sleep duration score was 2 (rather bad) both pre- and post-intervention. Sleep efficiency improved from 2 (rather bad) to 1 (quite good). Sleep disturbance scores decreased from 3 (very bad) to 2 (rather bad). Drug use remained 0 (very

good) both pre- and post-intervention. Daytime function scored 2 (rather bad) pre- and post-intervention. On the second day, the overall score before the intervention was 13 (poor), and post-intervention it was 9 (still poor).

On June 26, 2024, the third day of sleep hygiene implementation, for Respondent I, Ms. "Y", the pre-intervention sleep quality score was 1 (quite good), improving to 0 (very good) post-intervention. The sleep latency score remained 0 (very good) pre- and post-intervention. The sleep duration improved from 2 (rather bad) to 1 (quite good). Sleep efficiency remained at 2 (rather bad) pre- and post-intervention. Sleep disturbance improved from 1 (quite good) to 1 (quite good). Drug use remained 0 (very good). Daytime function improved from 1 (quite good) pre-intervention to 1 (quite good) post-intervention. On the third day, the overall score before the intervention was 9 (poor), and post-intervention it improved to 7 (good).

For Respondent II, Ms. "A", the pre-intervention sleep quality score was 2 (rather bad), improving to 1 (quite good) post-intervention. The sleep latency score was 0 (very good) both pre- and post-intervention. The sleep duration remained at 2 (rather bad) pre- and post-intervention. Sleep efficiency improved from 1 (quite good) to 0 (very good). Sleep disturbance remained at 2 (rather bad) pre- and post-intervention. Drug use remained 0 (very good).

It can be concluded that on the 3rd day of providing sleep hygiene measures, the overall score before the intervention was 9 (poor), and after implementation, it improved to 7 (poor).

On June 27, 2024, the fourth day of sleep hygiene implementation, for Respondent I, Ms. "Y", the pre-sleep quality score was 1 (fairly good), improving to 0 (very good) post-intervention. The sleep latency score remained 0 (very good) pre- and post-action. The sleep duration improved from 1 (fairly good) to 1 (fairly good), while sleep efficiency improved from 1 (fairly good) to 0 (very good). Sleep disturbance remained at 1 (fairly good). Drug use remained 0 (very good), and daytime function improved from 1 (quite good) to 0 (very good). On Day 4, the pre-action score was 7 (good), and post-action, it improved to 5 (good).

Meanwhile, in Respondent II, Ms. "A", the pre-sleep quality score was 1 (quite good), improving to 0 (very good) post-action. Sleep latency remained at 0 (very good) pre- and post-action. The sleep duration improved from 2 (rather bad) to 1 (quite good), while sleep efficiency remained at 0 (very good). Sleep disturbance remained at 1 (fairly good). Drug use remained 0 (very good), and daytime function improved from 1 (quite good) to 0 (very good).

It can be concluded that on the fourth day of implementing sleep hygiene actions, the overall score before the intervention was 6, reflecting good results, while after implementation, the score improved to 2, also indicating good results. From the case study data, it is evident that sleep hygiene actions over the four days resulted in a noticeable difference in sleep quality between Ms. Y and Ms. A. Ms. Y showed a slower improvement, with her score reaching 5, while Ms. A improved more significantly, with a final score of 2. The difference can be attributed to Ms. Y's difficulty in adhering to the prescribed sleep schedule, while Ms. A successfully implemented the schedule, overcoming her sleep disorders and improving her sleep quality. This change contributed to healthier sleep patterns, enhancing physical relaxation. These findings align with the Sleep Hygiene theory proposed by Irish et al. (2015), which suggests that non-pharmacological interventions, such as behavioral and environmental modifications, can effectively address insomnia and other sleep disorders. The theory emphasizes the importance of consistent sleep and wake times, a comfortable sleep environment, and avoidance of stimulants such as caffeine and alcohol before bed. Regular physical activity and relaxation techniques are also essential for improving sleep quality and

overall well-being. Thus, good sleep hygiene practices can significantly enhance sleep quality and health.

**Conclusion**

The conclusion of this case study is that the implementation of sleep hygiene is effective in improving sleep quality in adolescents experiencing insomnia. After four days of sleep hygiene practices, both respondents, Ms. Y and Ms. A, showed significant improvements in sleep quality, duration, efficiency, and disturbances. The study highlights the potential of sleep hygiene as an important intervention in improving adolescent sleep quality. It also serves as a valuable learning experience for the author, contributing to their academic knowledge and future practice in addressing sleep disorders in adolescents.

*Conflict of interest*

The researchers stated that there is no conflict of interest related to the implementation and publication of the results of this research. The entire research process, from planning, data collection, analysis, to report preparation, was carried out independently without any influence or pressure from any third party. A commitment to research ethics is upheld throughout the research process, ensuring transparency, accuracy and honesty in reporting results. Respondents' participation was voluntary with informed consent, and their confidentiality and privacy were maintained in accordance with applicable research ethics standards. With this statement, researchers hope that the research results can be trusted and used as a valid reference for the development of science and health practices related to ethnomedicine and reproductive health.

*Authors' contribution*

Each author makes an equal contribution to all parts of the research. All authors have reviewed and approved the final draft critically and are responsible for the index and similarity of the manuscript.

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