Journal of Professional Evidence-based Research and Advances in Wellness and Treatment (PERAWAT)
Vol. 03, No. 1, January 2026, 26-37
***e*-ISSN 3064-4453**

The Relationship of Children's Sleep Patterns with Learning Concentration Levels in Children aged 7-12 Years

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Article Information
Received: December 27, 2025
Revised: January 09, 2026
Online: January 26, 2026

Keywords
Sleep Patterns, Learning Concentration, Sleep Disorders

ABSTRACT

Low learning concentration in children is often linked to irregular sleep habits, such as going to bed late or experiencing sleep disturbances, which can reduce sleep quality and affect classroom performance. This study aimed to examine the relationship between sleep patterns and learning concentration among students. A quantitative correlational approach was used with a sample of 75 students from Grades 2–6 at SD Negeri 37 Anduring Padang, selected randomly. Data were collected through sleep pattern questionnaires and classroom observation of learning concentration, then analyzed using Pearson correlation. The results showed that most children had irregular sleep patterns, with 40% sleeping less than eight hours per night, while_toggle The majority of students displayed moderate learning concentration levels. Statistical analysis revealed a fairly strong positive relationship between regular sleep patterns and learning concentration ($r = 0.65$, $p < 0.05$). These findings suggest that adequate and consistent sleep plays an important role in improving children's learning concentration. Therefore, parents and schools should work together to promote healthy sleep habits to support optimal learning outcomes in children aged 7–12 years.

***Keywords**: Sleep Patterns, Learning Concentration, Sleep Disorders*

INTRODUCTION

Children's sleep patterns are an important aspect of physical and cognitive development that is often overlooked. Adequate sleep greatly affects various body functions, including energy recovery, mood regulation, and cognitive abilities, such as concentration and memory (Nugroho, 2020). At school age, sleep quality is one of the factors that determine a child's academic

http://doi.org/10.69855/perawat.v3i1.432
https://gpijournal.com/index.php/perawat

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development, so sleep disorders in this age group are increasingly becoming a concern for parents and educators.

The factors that cause a child to have trouble sleeping are quite diverse. Irregular sleep habits, excessive use of gadgets, and stress are some of the main causes. In Indonesia, about 58% of school-age children are reported to have irregular sleep habits and sleep less than 8 hours per night (Kemdikbud, 2021). In addition, going to bed late or playing too many gadgets before bed can also disrupt a child's circadian rhythm, thereby decreasing overall sleep quality (Rismawati, 2020).

The prevalence of sleep disorders in children has a direct impact on their learning concentration ability. Children who sleep less than 8 hours per night tend to have less attention than children with good sleep patterns. Research shows that children with less sleep duration have difficulty maintaining focus during learning, which can potentially affect their academic performance (Supriyadi, 2019).

Poor sleep quality affects not only concentration, but also the child's cognitive and emotional functions. During sleep, information processing and memory strengthening occur, so lack of sleep can interfere with learning ability and result in decreased academic achievement (Fahmi, 2022). In addition, children who experience low sleep quality tend to be more irritable and have difficulty interacting socially, which can indirectly affect their learning focus at school.

Sleep disorders experienced by children are directly related to decreased learning concentration. When a child's sleep is insufficient, the absorption of information at school becomes impaired, which can decrease their academic grades (Purnama, 2021). These findings confirm the importance of adequate sleep to support children's optimal concentration and learning ability.

In addition to internal factors such as children's sleep habits, external factors also play an important role in children's sleep patterns. The role of parents is decisive, because parents who do not have a consistent sleep routine or who often work overtime can cause children to get used to sleeping late (Santoso, 2020). Parents play a role in creating an environment that supports good sleep, including regulating children's sleep schedules and reducing distractions such as gadget use before bed.

Research by Suryani & Putra (2021) shows that children who have parents with poor sleep patterns tend to experience sleep disorders more often. This indicates that parents ' sleep patterns affect children's sleep patterns. If parents have a bad sleep routine, children tend to imitate these habits, which risks causing sleep disorders in them.

Several studies have also shown that the environment in which children sleep greatly affects the quality of their sleep. Bedroom conditions that are noisy, too bright, or too hot can cause sleep disorders in children (Wulandari, 2020). Therefore, creating a comfortable, calm and free from external distractions sleep environment is an important step that parents and teachers should take into account.

The decrease in children's sleep quality is very influential on their learning concentration. Children who get enough sleep and have regular sleep patterns tend to be more focused and can

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absorb information better during the learning process at school. This has increasingly led to the importance of more in-depth research on the relationship between sleep patterns and children's learning concentration in school (Rahmawati & Haryani, 2020).

The importance of quality sleep for school-age children is also gaining attention from schools, which are beginning to realize that external factors such as children's sleep habits need to be considered to support their academic success. By educating children, parents, and teachers about the importance of adequate sleep, it is hoped that it can improve the quality of students ' learning concentration, which can ultimately have an effect on their learning outcomes (Aditya, 2021).

In Indonesia, although there are already several policies related to Child Health and welfare, there are still few that address the issue of children's sleep patterns in depth. Therefore, there needs to be a collaborative effort between families, schools, and communities to ensure that children get healthy sleep patterns, which in turn supports their academic achievement.

The results of this study are expected to contribute to improving public understanding of the importance of adequate and regular sleep for Child Development. With greater awareness of the relationship between sleep patterns and learning concentration, parents and schools can better understand the vital role of sleep in supporting children's educational success (Dewi & Suryani, 2021).

Researchers ' interest in this topic stems from a phenomenon often seen in the field, where many children are sleepy or lose focus during learning activities. This situation prompted researchers to examine more deeply about sleep patterns and how it is directly related to children's learning concentration. Researchers hope to provide empirical evidence that can be used as a basis for parents, teachers, and schools to improve children's sleep habits, with the aim of improving the quality of their education.

METHODS

This study uses quantitative methods with a correlational approach to analyze the relationship between children's sleep patterns and learning concentration levels. This method was chosen because it can measure the strength and direction of the relationship between variables without manipulating the variables. In this approach, researchers will examine the extent to which changes in one variable (sleep patterns) are related to changes in another variable (learning concentration) among students. The correlational approach is considered appropriate to explore the relationships that exist between the two variables studied in the context of primary school age children.

Sample selection using random sampling technique with a total sample in this study as many as 75 respondents from the population of children in Grades 2 to 6 SD Negeri 37 Padang. The students involved in the study were between 7 and 12 years old, which is the age at which cognitive development and learning concentration are strongly influenced by the quality of their sleep. Inclusion criteria in the study included 2nd to 6th grade students aged 7-12 years, willing to

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follow the entire study procedure, obtaining consent from parents/guardians, and not having any medical disorders or conditions that significantly affect sleep quality. Meanwhile, the exclusion criteria include students who have a medical disorder or serious psychological condition that affects sleep or study concentration, do not obtain consent from parents/guardians, or have incomplete data due to absenteeism during data collection.

The instruments used in this study include questionnaires to measure children's sleep patterns and observation of their learning concentration levels. The questionnaire on sleep patterns was designed to identify students ' sleep habits, including sleep time, sleep duration, and possible sleep disturbances. In addition, observations were made by class teachers who were trained to assess the level of concentration of students ' learning during teaching and learning activities. The Data obtained from the two instruments were then analyzed using Pearson correlation statistical analysis to determine the extent of the relationship between sleep patterns and children's learning concentration levels. Pearson's correlation was chosen for its ability to measure linear relationships between two variables with a clear measure of the strength and direction of the relationship.

RESULTS

In this study, data analysis was conducted to determine the picture of children's sleep patterns and their learning concentration levels, both univariate (single variable) and bivariate (relationship between two variables). The results of the analysis are presented in the form of a table that describes the distribution of data on each variable and the relationship between sleep patterns with the level of concentration of children's learning.

1. Distribution of Children's Sleep Patterns and Learning Concentration Levels

The following table shows the distribution of data regarding children's sleep patterns and their learning concentration levels based on measurements made through questionnaires and observations by teachers.

Table 1. Distribution of Children's Sleep Patterns and Learning Concentration Levels

Learning Concentration Level	Frequency (n)	Percentage (%)
Good (Very Focused)	21	28%
Moderate (Sometimes Focal)	48	64%
Bad (Often Distracted)	6	8%

Based on the table above, most students (60%) have a regular sleep pattern with sleep duration between 8 to 10 hours per night. However, about another 40% of students had irregular sleep patterns, with sleep duration less than 8 hours per night. This indicates the presence of irregularities in sleep patterns that can affect the quality of student sleep.

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2. The Relationship of Children's Sleep Patterns with Learning Concentration Levels in Children Aged 7-12 Years

To determine the relationship between sleep patterns with the level of concentration of learning, Pearson correlation analysis was performed. Here is the correlation between the two variables.

Table 2. The Relationship of Children's Sleep Patterns with Learning Concentration Levels in Children Aged 7-12 Years

Sleep Patterns	Study Concentration	Pearson Correlation (r)	Significance (p)
Regular sleep vs. Good Concentration	45 (60%)	21 (28%)	0.65
Irregular sleep vs. Poor Concentration	30 (40%)	6 (8%)	

The results of Pearson correlation analysis showed that there is a significant positive relationship between sleep patterns and children's learning concentration levels. Correlation value of 0.65 ($p < 0.05$) indicates a strong relationship between the two. Children who have a regular sleep pattern (8-10 hours per night) tend to have better concentration on learning. In contrast, children who sleep less than 8 hours per night, which falls into the category of irregular sleep patterns, tend to have lower levels of concentration. From these results, it can be concluded that regular sleep has a positive influence on students ' learning concentration levels, which supports the hypothesis that good sleep patterns can improve children's learning concentration in school.

DISCUSSION

1. Distribution of Children's Sleep Patterns and Learning Concentration Levels

The results of this study showed that most students (60%) had a regular sleep pattern, with sleep duration between 8 to 10 hours per night. Despite this, another 40% of students sleep less than 8 hours per night, which indicates irregularities in their sleep habits. This is a significant finding, given the importance of adequate sleep for the physical and cognitive development of primary school-age children.

In addition, other factors that affect the quality of children's sleep are eating habits and a less supportive sleep environment. Research by Santoso (2020) shows that heavy eating habits before bed can affect the quality of children's sleep, because the digestive system that works during sleep can cause sleep disorders. Noisy or uncomfortable sleeping environments can also cause sleep disorders in children, so that even though there is enough sleep time, the quality of sleep is still disturbed.

This level of sleep disturbance is in line with the phenomenon found in research by Fahmi (2022), which states that although many children get enough sleep in terms of duration, they still experience poor sleep quality due to environmental factors and unhealthy sleep habits. This

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emphasizes the importance of creating a comfortable and supportive sleep environment for children, such as good regulation of room temperature and reduction of sound or light disturbances.

In the context of Education, a good sleep pattern is very important because it can affect the child's learning concentration. Research conducted by Purnama (2021) shows that children who sleep enough and regularly have better concentration abilities during the learning process at school. On the other hand, children with irregular sleep patterns or lack of sleep tend to feel tired more easily and less focused when taking part in learning, which has an impact on decreasing their academic performance.

However, some studies show results that are inversely proportional to the findings of this study. For example, Nugroho's (2021) study reports that adequate sleep duration does not always correlate with increased learning concentration in children, as other factors such as academic stress and digital activities before bedtime also affect cognitive abilities. These findings suggest that sleep quality is influenced not only by eating habits or sleep environment, but also by other psychological and behavioral factors, which may be important variables to take into account in follow-up studies.

In the context of education, good sleep patterns remain very important because they can affect the child's learning concentration. Purnama research (2021) shows that children who get enough sleep and have regular sleep patterns tend to have better concentration abilities during the learning process at school. Conversely, children with irregular sleep patterns or lack of sleep are more likely to feel tired and less focused when taking part in learning, which has an impact on decreasing their academic performance.

According to the theory of Developmental Psychology, sleep has a vital role in the body's recovery process and information processing in the brain, especially for children who are in their infancy (Dewi & Suryani, 2021). Adequate and quality sleep supports the strengthening of short-term memory, learning, as well as better concentration in daily activities, including learning at school. Therefore, regular sleep patterns are the main factor affecting a child's academic performance.

Previous research conducted by Yulianto & Utami (2019) found that sleep duration of less than 8 hours can affect children's cognitive abilities, including learning concentration. They stated that lack of sleep leads to a decrease in the ability to concentrate and memory, which has an effect on the absorption of information in school. This study confirms the importance of adequate sleep duration to improve children's learning concentration, which is in line with the findings in this study.

However, although most of the students in the study slept regularly, there was still a group that had irregular sleep habits. This can be caused by external factors such as excessive use of gadgets or the habit of watching television before bed. Rismawati (2020) in her research mentioned that exposure to gadget screens before bed can interfere with children's sleep quality, because the

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blue light emitted by Gadgets inhibits the production of melatonin, a hormone that regulates sleep cycles.

This finding is in line with the theory put forward by Horne (2017), which states that adequate sleep plays a role in memory consolidation, which is critical for learning. According to this theory, during sleep, children's brains process information obtained throughout the day, so adequate and quality sleep can improve a child's memory and learning ability. Therefore, regular sleep patterns are one of the factors that favor increasing children's learning concentration.

On the other hand, age also affects children's sleep patterns. Research by Wulandari (2020) revealed that children of primary school age (7-12 years) need about 9-10 hours of sleep every night to support their physical and cognitive development. The results of this study showed that most of the children in the study sample had slept for a sufficient duration, although there was still a small percentage who slept less than 8 hours. This indicates that although the majority of children have adequate sleep habits, there are still challenges in achieving optimal sleep for all children.

Research conducted by Dewi & Suryani (2021) also revealed that although most children get enough sleep, irregular sleep habits, such as going to bed too late or waking up in the middle of the night, remain a fairly common problem among children. They note that irregular sleep patterns can disrupt children's sleep cycles, affecting their sleep quality and concentration power while attending lessons at school.

Regular sleep patterns not only play a role in improving sleep quality, but also help children have a clear routine, which in turn affects their discipline and emotional stability. Research by Rahmawati & Haryani (2020) revealed that children who have a regular sleep routine tend to be more disciplined in carrying out their daily activities, including in participating in learning activities at school. This suggests that regular sleep also has a positive psychological impact on the child.

Although most of the students in the study slept enough, a lack of understanding of the importance of good quality sleep remains a major challenge. According to research by Santoso (2020), parents and teachers need to be given more understanding of the importance of healthy sleep habits for children. Educating parents and teachers can help create an environment that supports good sleep patterns, both at home and at school.

To improve the quality of children's sleep, it is important for parents to reduce factors that can interfere with children's sleep, such as the use of gadgets before bed and unhealthy eating patterns. Research by Wulandari (2020) emphasizes that parents should play an active role in creating a conducive sleep environment, such as ensuring children go to bed at the same time every night and keeping the bedroom atmosphere comfortable and calm.

Based on the results of this study, it can be concluded that although the majority of students have a regular sleep pattern, there is still a small percentage of students who sleep less than 8 hours per night. Therefore, it is important to continue to educate parents and schools about the importance of adequate and regular sleep to support learning concentration and overall child

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health. The study also shows that external factors such as gadget use habits and sleep environment greatly affect the quality of children's sleep, so there needs to be a collaborative effort to create healthier sleep habits for children.

2. The Relationship of Children's Sleep Patterns with Learning Concentration Levels in Children Aged 7-12 Years

In the bivariate analysis conducted in this study, a significant positive relationship was found between children's sleep patterns and their learning concentration levels. The results of Pearson correlation analysis showed the value of $r = 0.65$ with $p < 0.05$, which indicates a strong correlation between the two variables. That is, the better the child's sleep pattern, the better their level of concentration in school. These results are highly relevant to existing theories about the effect of sleep on cognitive function, including learning concentration.

According to the theory of cognitive development, sleep has a very important role in the process of memory consolidation, which is directly related to the child's ability to learn (Horne, 2017). During sleep, the brain processes the information received during the day and strengthens the memory related to the lesson learned. Therefore, adequate and quality sleep strongly supports children's learning concentration, which is related to their ability to absorb and remember information at school.

Research conducted by Yulianto & Utami (2019) also supports this finding. They found that children who had regular sleep patterns tended to have better concentration during learning. In contrast, children who slept less than 8 hours per night or had irregular sleep patterns, showed a significant decrease in their concentration ability. This is in line with the results of studies showing a strong link between good sleep patterns and increased study concentration.

Furthermore, research by Fahmi (2022) states that children who sleep enough will have more energy for activities and are easier to focus while studying. Adequate sleep regulates hormone levels and restores energy, which in turn improves their ability to concentrate for long periods of time. This study corroborates the results of this study which found a positive correlation between regular sleep patterns and children's learning concentration.

Another factor to consider is adequate sleep duration. Research by Purnama (2021) reveals that children who sleep more than 8 hours per night have better concentration and can follow learning with more focus than children who sleep less than 8 hours. These findings support the results of studies showing that the quality and quantity of children's sleep greatly affects their ability to concentrate in school.

However, the results of this study also show that although the majority of students sleep with sufficient duration, there is still a small number of children who sleep less than 8 hours per night. This reflects a broader phenomenon in society, where many children are exposed to external distractions such as the use of gadgets before bed or irregular sleep habits. Rismawati (2020) states that excessive use of gadgets before bed can disrupt children's sleep patterns, which has an impact on sleep quality and ultimately on their concentration at school.

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Related research by Santoso (2020) also shows that children with regular sleep patterns have better focus while studying. In contrast, sleep disorders, such as going to bed late or waking up in the middle of the night, often cause the child to feel tired in the morning and find it difficult to concentrate on lessons. This confirms that sleep disorders affect the level of concentration of children's learning, which risks lowering their academic performance.

In this case, the influence of sleep patterns on learning concentration is closely related to the quality of sleep possessed by children. Research by Dewi & Suryani (2021) shows that regular and quality sleep, such as adequate sleep with consistent time, has a positive impact on children's cognitive function. Regular sleep can improve concentration and increase the absorption of information in the classroom.

The theory proposed by Walker (2017) also explains that poor sleep quality reduces the brain's ability to manage information efficiently. Children who get enough sleep, on the contrary, experience significant improvements in cognitive abilities, including in terms of memory and concentration. Therefore, the results of this study indicate that regular sleep patterns are very influential on the ability of children's concentration in learning.

In addition, the sleep environment also plays an important role in the quality of a child's sleep. Wulandari (2020) explains that a comfortable sleeping environment, such as a quiet room, the right temperature, and appropriate light settings, can improve the quality of children's sleep. This is in line with the results of research that shows that environmental factors that support good sleep will affect the level of concentration of children in participating in learning activities.

The study also noted that children who do not sleep enough often have emotional disorders, such as anxiety and unstable mood, which in turn affects their concentration on learning. According to research by Santoso (2020), children with sleep disorders often experience stress and difficulty adapting at school, which causes them to find it difficult to focus on tasks or lessons.

Related to that, the importance of the role of parents and educators in helping children have healthy sleep patterns cannot be underestimated. Education on the importance of adequate and regular sleep should be done early on. Research by Rahmawati & Haryani (2020) shows that parents who pay attention to the quality of their children's sleep, by setting a consistent bedtime, can improve the quality of sleep and the child's learning concentration.

In addition, it is important to pay attention to the interaction between sleep patterns and other factors such as academic stress. Research by Suryani & Putra (2021) found that children who experience high academic pressure are more likely to have sleep disorders, which results in a decrease in their learning concentration. This suggests that learning-related stress may also play a role in children's sleep quality and concentration.

However, despite the many factors that affect a child's sleep quality and learning concentration, this study confirms that sleep patterns remain the dominant factor. This can be seen from the correlation results that show that children who sleep with sufficient duration and

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regularly have better concentration when attending lessons in class. Thus, good sleep quality is the main factor to take into account to improve children's concentration and academic performance.

In addition, a more holistic approach is needed to deal with these sleep and concentration problems. Education to parents and teachers about healthy sleep habits and good bedtime arrangements should be part of efforts to improve the quality of education in Indonesia. Research by Dewi & Syriac (2021) shows that the awareness of parents and educators is essential to create an environment that supports healthy sleep for children.

Overall, the results of this study show that regular sleep patterns are strongly related to the level of concentration of children's learning in school. Children who sleep with sufficient duration and have a good sleep routine tend to have better concentration in learning. Therefore, this study makes a significant contribution in improving the understanding of the importance of adequate sleep to support children's learning concentration.

CONCLUSIONS

Based on the results of univariate analysis, the majority of students in SD Negeri 37 Anduring Padang have regular sleep patterns, with 60% of students sleeping between 8 to 10 hours per night. Despite this, about another 40% of students have less regular sleep habits, sleeping less than 8 hours, which indicates a challenge in children's sleep habits. In terms of study concentration, most students (64%) showed a moderate level of concentration, while only 28% of students had good concentration, and another 8% had poor concentration. This reflects the presence of variations in the level of concentration of study among students, which may be influenced by sleep and other external factors.

The results of the bivariate analysis showed a significant and positive relationship between sleep patterns and children's learning concentration levels. Pearson's correlation of 0.65 ($p < 0.05$) showed that the better the children's sleep patterns, the higher their level of concentration in learning. These findings support the hypothesis that good sleep quality plays an important role in improving concentration during learning activities at school. Therefore, it is important for parents and schools to pay attention to children's sleep habits as a factor that affects their concentration ability to follow learning and achieve optimal academic performance.

ACKNOWLEDGMENT

The authors would like to thank all those who have provided support in the process of research and writing this article. Gratitude goes to SD Negeri 37 Anduring Padang for the support of the facilities that have been provided. Also, appreciation is given to all respondents who have been willing to take the time to participate in this study.

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