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THE INFLUENCE OF SLEEP HABITS ON COGNITIVE FUNCTIONS IN THE SPEECH OF PRESCHOOL CHILDREN

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Abstract

This study investigates the influence of sleep habits on the cognitive functions observed in the speech of preschool children. Sleep plays a crucial role in a child's development, affecting memory, attention, and language skills. The research aims to understand how irregular sleep patterns or insufficient sleep impact the clarity, vocabulary, and structure of preschoolers' speech. Data were collected from 5 preschool children through parent questionnaires and speech assessments. The findings reveal that children with consistent and adequate sleep show better cognitive abilities, reflected in their ability to form coherent sentences and use varied vocabulary. Conversely, children with poor sleep habits often display difficulties in speech fluency and comprehension. This study highlights the importance of healthy sleep routines for optimal cognitive and language development in early childhood. Recommendations for parents and educators are also provided.

Keywords: Sleep Habits, Cognitive Functions, Preschool Children, Speech Development, Language Skills, Sleep Patterns, Early Childhood Development.

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INTRODUCTION

A. BACKGROUND

Sleep is a fundamental part of a child's overall development, playing a key role in physical growth, emotional regulation, and cognitive abilities. During the preschool years, children experience rapid cognitive and linguistic development, making sufficient and high-quality sleep essential for optimal progress. Research has shown that sleep influences various cognitive functions, such as memory, attention, and problem-solving skills, all of which are closely linked to language and speech development.

However, many preschool children do not get the recommended amount of sleep due to irregular routines, environmental factors, or modern lifestyle habits. Poor sleep quality or quantity can lead to difficulties in concentration, learning, and emotional stability, which may manifest in their speech. Children with insufficient sleep often struggle to use clear sentences, express ideas coherently, and expand their vocabulary, which can affect their overall communication skills.

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Understanding the relationship between sleep habits and cognitive functions is crucial for parents, educators, and healthcare professionals to promote better developmental outcomes. This study focuses on exploring how sleep patterns influence the speech and cognitive abilities of preschool children, providing insights into the importance of establishing healthy sleep routines during early childhood.

B. Research Problem

Preschool children often experience irregular sleep patterns, which may affect their cognitive functions, particularly in speech development. However, there is limited research on how sleep habits influence aspects like vocabulary, sentence structure, and fluency in preschoolers' speech. This study aims to explore this relationship and address the lack of understanding in this area.

C. Research Objective

The aim of this research is to study how sleep habits affect the brain functions that help with language development in preschool children. It will focus on areas like vocabulary, sentence structure, and fluency to better understand how sleep affects early language skills. The objectives are as follows:

1. To look at the link between sleep duration and quality and how it affects vocabulary development in preschool children.
2. To examine how irregular sleep patterns influence the organization and clarity of children's speech.
3. To assess how not getting enough sleep affects speech fluency and overall communication skills.
4. To provide practical tips for parents and educators on creating healthy sleep routines that support better cognitive and language development.

PREVIOUS WORK

Previous research has shown that sleep is important for children's cognitive development, including language skills. Studies like Beebe et al. (2010) found that poor sleep quality in children can affect their attention and language abilities. Galland et al. (2012) also discovered that children who do not get enough sleep may have slower thinking speeds and delayed language development.

Some studies have focused specifically on how sleep affects speech. Owens et al. (2013) found that children with sleep problems often have trouble with speech delays and forming clear sentences. Touchette et al. (2007) also showed that irregular sleep habits can reduce vocabulary growth and make speech less fluent.

However, there is not much research directly linking sleep habits to the specific ways children use language, like forming sentences and speaking smoothly. This study aims to explore this connection and provide more understanding of how sleep affects speech development in preschool children.

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RESEARCH METHOD

A. Research Design

This study will use a simple observational design. Data will be collected from 5 preschool children, selected based on different sleep habits. Parents will complete a brief questionnaire about their child's sleep patterns, including sleep duration and consistency. The children's speech will be assessed through a short, structured conversation to evaluate their vocabulary and sentence fluency.

The data will be analyzed to look for any patterns between the children's sleep habits and their speech abilities. The aim is to identify if children with regular and sufficient sleep show better language skills than those with irregular sleep patterns.

B. Research Subject

The research subject of this study consists of 5 preschool-aged children, aged 4 to 6 years, selected based on varying sleep habits. These children are observed in terms of their sleep patterns, including sleep duration, quality, and consistency, and how these factors influence their cognitive and language development. The study specifically investigates the relationship between sleep habits and key aspects of speech development, such as vocabulary, sentence structure, and fluency. By focusing on this age group, the research aims to understand how irregular or insufficient sleep can impact their ability to form coherent sentences, use diverse vocabulary, and communicate effectively. Data collection includes both parent questionnaires on sleep habits and speech assessments through structured conversations with the children.

DATA ANALYSIS

A. The Impact of Sleep Habits on Vocabulary Development

The analysis of data from parent questionnaires and speech assessments reveals that sleep duration and consistency are significantly linked to vocabulary growth in preschool children. Children who maintained consistent and adequate sleep routines showed a more extensive vocabulary compared to those with irregular or insufficient sleep. For example, children with regular sleep patterns frequently used a broader range of words and demonstrated better word recall during conversations. On the other hand, children who had inconsistent sleep or less sleep per night showed limited vocabulary, often repeating basic words and struggling to use more complex terms.

Factors influencing vocabulary development include the quality of sleep, with children who had restful sleep exhibiting better memory retention and faster word learning. This suggests that a stable sleep routine is crucial for the cognitive processes involved in language acquisition.

B. The Influence of Sleep on Sentence Structure and Fluency

The analysis of sentence construction and fluency indicated a direct relationship between sleep habits and the clarity of speech. Preschoolers with adequate sleep patterns formed more coherent sentences and were able to express ideas in a more structured manner. These children exhibited better control over grammar and were able to combine simple

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sentences into more complex ones. In contrast, children with poor sleep habits often struggled with sentence formation, producing shorter, incomplete sentences and frequently using filler words like "um" or "like."

Furthermore, children with inconsistent sleep schedules showed greater difficulty in sustaining a flow of speech during structured conversations, leading to longer pauses and disruptions in their ability to express themselves clearly. This highlights the impact of sleep on cognitive processing speed, which affects fluency in speech.

C. Sleep Duration and Communication Skills

In terms of overall communication skills, the study observed that children who consistently received sufficient sleep demonstrated higher levels of social interaction and engagement in conversation. These children were more willing to participate in dialogues, contributing their thoughts and ideas confidently. In contrast, children with irregular sleep patterns displayed signs of irritability or inattentiveness, which impacted their willingness to communicate.

In particular, children who slept for an optimal duration (10-12 hours per night) were able to engage in more complex interactions, showing improved listening skills, turn-taking, and responsiveness during conversations. This suggests that sleep not only impacts vocabulary and sentence structure but also plays a role in the social aspects of language development.

RESULTS AND DISCUSSION

Teacher-student interaction significantly impacts early childhood language development. This study's findings emphasize the relationship between sleep habits and preschool children's cognitive and language development.

Child's Nmaes	Interaction Character	Observation and Effects on Language Development
Judika pasaribu	Energeticand Inquisitive	Judika demonstrates a Broad vocabulary and engages actively in discussions. However, irregular sleep leads to difficulties in sentence structure.
Stevi simatupang	Shy and Reserved	Stevi irregular sleep patterns make her hesistant to communicate. However adequate rest promotes better vocabulary use.
Josua sijabat	Confident and Assertive	Josua shows significant progress Construction sentences and vocabulary detention with consistent sleep
Putri simanjuntak	Sensitive and Observant	Putri prefers Observing but exhibition slow vocabulary growth and fragmented sentences when sleep is insufficient
Owen	Passive and Reluctant	Owen irregular sleep causes frequent pauses in speech and limited vocabulary. Adequate sleep encourages better Fluency and interaction.

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General Observations :

1. Vocabulary Development: Regular sleep enhances vocabulary acquisition, enabling children to recall and use words effectively.
2. Sentence Structure: Adequate sleep correlates with well-organized sentence formation.
3. Speech Fluency: Poor sleep disrupts fluency, leading to hesitations and incomplete sentences.
4. Communication Skills: Children with consistent sleep routines engage more confidently in social interactions.

Key themes :

1. Cognitive Development Through Restful Sleep
   Adequate sleep improves memory retention and cognitive processing, which are essential for language skills like vocabulary acquisition and sentence formation.
2. Importance of Consistent Sleep Patterns
   Consistent sleep routines support the fluency and organization of children's speech, helping them form structured sentences and communicate effectively.
3. Impact of Sleep on Social Interaction
   Restful sleep enhances children's social engagement, allowing them to participate actively in conversations and express their ideas confidently
4. Sleep as a Predictor of Language Competence
   Regular and sufficient sleep duration directly correlates with improved sentence complexity, speech clarity, and overall communication skills.
5. Challenges of Irregular Sleep Patterns
   Irregular or insufficient sleep disrupts cognitive functions, leading to vocabulary limitations, fragmented sentences, and hesitations in speech fluency.

CONCLUSION AND SUGGESTION

A. Conclusion

Sleep patterns are essential for the cognitive and linguistic development of preschool-aged children. Adequate and consistent sleep contributes to better vocabulary acquisition, improved sentence construction, and enhanced speech fluency. Conversely, inconsistent or insufficient sleep disrupts speech clarity, coherence, and social communication. Maintaining regular sleep schedules is crucial for fostering language skills and overall cognitive growth.

B. Suggestions

1. For Parents: Create and maintain regular sleep schedules to ensure children receive enough rest (10–12 hours per night), which is vital for their cognitive and language development.
2. For Educators: Develop personalized approaches to support children who struggle with irregular sleep, helping them improve their language proficiency.
3. For Future Research: Investigate the long-term effects of sleep habits on children's linguistic abilities and academic achievements to gain more comprehensive insights into developmental impacts.

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