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The Ular Naga Panjang Game as an Effort to Improve Dental and Oral Health Knowledge in Early Childhood

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ABSTRACT

Background: Oral and dental health is an important component of overall health. Low levels of oral and dental health knowledge among children may increase the risk of oral health problems, such as dental caries. One approach to improving children's oral and dental health knowledge is education through interactive and enjoyable learning methods, including counseling using the Ular Naga Panjang game. Objective: This study aimed to analyze oral and dental health knowledge before and after counseling using the Ular Naga Panjang game among early childhood children. Methods: A pre-experimental one-group pretest-posttest design was used. The study was conducted at Raudhatul Athfal Nurul Badar, South Jakarta, in April 2026. Total sampling was used. Data were collected using a 10-item multiple-choice questionnaire and analyzed using the Wilcoxon test. Results: Before counseling, 24 students (60%) had good knowledge and 16 students (40%) had poor knowledge. After counseling using the Ular Naga Panjang game, all 40 students (100%) were categorized as having good knowledge. The Wilcoxon test produced a p-value of 0.000 ($p < 0.05$), indicating a significant difference in knowledge before and after the intervention. Conclusion: The Ular Naga Panjang game was effective in improving oral and dental health knowledge among early childhood children

INTRODUCTION

Oral and dental health refers to a condition in which the mouth, teeth, and related structures are maintained in a healthy state, enabling individuals to perform vital functions such as eating, breathing, and speaking (Artemisia et al., 2025). Oral health also encompasses psychosocial aspects, including self-confidence, well-being, and the ability to interact socially and work without pain or discomfort (Stuart, 2021).

According to the World Health Organization (WHO, 2022), the Western Pacific Region has a high prevalence of oral health problems, reaching 46%, while the largest number of cases is reported in the Southeast Asia Region, with an estimated 135 million cases. Data from the 2023 Indonesian Health Survey (SKI, 2023) indicate that 11.2% of the Indonesian population and 34.2% of the population in Jakarta still experience oral health problems, including dental caries, tooth sensitivity, tooth loss, and periodontal disease. The same survey reported a substantial burden of dental caries among children aged 5–9 years. According to (Sumadewi & Harkitasari, 2023) reported that dental caries commonly occurs among children aged 5–9 years and that caries prevalence among school-aged children exceeds 70%.

Poor oral health, particularly dental caries, can interfere with children's daily activities and quality of life (Choirunnisa, 2023). Untreated caries may cause pain that interferes with chewing and reduces nutritional intake, potentially affecting children's growth and development. It may also lead to abscesses and further impair chewing and speaking functions and children's appearance (Rosa & Katherine, 2024).

According to (WHO, 2022), social determinants of health are non-medical factors that influence health outcomes. The conditions in which people are born, grow, live, work, and age significantly affect health and well-being. Dental caries is influenced by multiple factors arising from interactions among environmental, genetic, and behavioral factors (Siregar et al., 2024).

Behavioral factors are among the dominant determinants of dental caries, particularly high sugar consumption and repeated intake of cariogenic foods throughout the day. Such behavior includes

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toothbrushing habits, dietary patterns, and dental attendance. When oral health maintenance behaviors are inadequate, the risk of dental caries increases (Wowor et al., 2025).

The high incidence of dental caries requires appropriate preventive measures, particularly among children. Early childhood and the primary school period are vulnerable stages because children still have limited understanding of oral and dental health. One strategy for preventing and addressing oral health problems is oral health education (Andreastiti & Widodo, 2023).

The success of oral health education among children is strongly influenced by the learning method used (Purnama et al., 2020). Game-based methods can facilitate children's understanding of educational material and make health messages more engaging and easier to comprehend (Aini et al., 2022).

Enjoyable games can be effective tools for delivering information to children in an accessible manner. One such method is the Ular Naga Panjang game, a simple traditional group game that can be modified to incorporate oral health messages. It can encourage children's engagement, knowledge, and understanding (Ruslan & Jayanti, 2025). Through this approach, children can learn about maintaining oral and dental health in a more enjoyable manner

METHOD

This study employed a pre-experimental one-group pretest-posttest design to assess the effectiveness of the Ular Naga Panjang game in improving oral health knowledge among early childhood students. The study was conducted at Raudhatul Athfal Nurul Badar, South Jakarta, in April 2026.

Sampling used a total sampling technique; therefore, the entire study population was included as participants. The participants comprised 40 Class A and B students.

The research instrument was an oral and dental health knowledge questionnaire consisting of 10 multiple-choice questions. Knowledge was categorized as good when the score was at or above the mean and poor when the score was below the mean (Azwar, 2016). The intervention was conducted twice, while the pretest and posttest were administered one week apart.

The research procedures were as follows: (1) the researchers introduced themselves and explained the activities to the participants; (2) informed consent was obtained before data collection; (3) a pretest was administered; (4) during the first intervention, the children were divided into two groups and formed a line resembling a dragon while singing a song about oral and dental health. When the game stopped, the child who was caught was asked an oral health question. A child who answered correctly took the role of the gate, whereas a child who answered incorrectly received immediate educational feedback and continued the game. A child who answered incorrectly three times was temporarily removed from the game; and (5) during the second intervention, the researchers delivered oral health education through the Ular Naga Panjang game, with the two groups playing independently for approximately 20 minutes.

Data were analyzed using bivariate analysis. The normality of the data was assessed using the Shapiro–Wilk test. Because the data were not normally distributed, the Wilcoxon signed-rank test was used to assess differences between pretest and posttest knowledge scores.

RESULT

Table 1. Characteristics of respondents by age and sex

Characteristics	n	%
Age 5 years	16	40.0
Age 6 years	24	60.0
Male	20	50.0
Female	20	50.0
Total	40	100.0

Table 1 shows that 40 Class A and B students at RA Nurul Badar participated in the study. There were equal numbers of male and female students, with 20 students (50.0%) in each group. Most participants were 6 years old (24 students; 60.0%).

Table 2. Distribution of oral health knowledge scores before and after the Ular Naga Panjang game

Knowledge	Mean	SD	Minimum	Maximum
Pretest	59.00	12.56	30	80
Posttest	85.25	5.98	70	100

Table 2 shows an increase in the mean oral health knowledge score after the intervention. The mean score increased from 59.00 before the intervention to 85.25 after the intervention.

Table 3. Normality test of oral health knowledge scores

Knowledge score	Mean ± SD	p-value
Pretest	59.00 ± 12.56	0.022
Posttest	85.25 ± 5.98	<0.001

The Shapiro–Wilk normality test showed p = 0.022 for the pretest and p < 0.001 for the posttest. Because both p-values were below 0.05, the data were considered non-normally distributed. Therefore, a non-parametric Wilcoxon signed-rank test was used.

Table 4. Effectiveness of the Ular Naga Panjang game in improving oral health knowledge

Knowledge score	Mean ± SD	p-value
Pretest	59.00 ± 12.56	<0.001
Posttest	85.25 ± 5.98	

Table 4 shows that the mean oral health knowledge score increased from 59.00 at pretest to 85.25 at posttest. The Wilcoxon signed-rank test yielded p < 0.001 (p < 0.05), indicating a statistically significant difference between knowledge scores before and after the intervention. Thus, the Ular Naga Panjang game was effective in improving oral and dental health knowledge among the early childhood students in this study

DISCUSSION

Before the intervention, 16 children (40%) were categorized as having poor knowledge. This finding indicates that a considerable proportion of children had not yet adequately understood oral and dental health topics, including how to maintain oral hygiene, appropriate toothbrushing times, and foods that may contribute to dental caries. These findings highlight the need for learning methods that are appropriate to the developmental characteristics of early childhood so that oral health messages can be understood more easily.

Game-based learning is one method that may be appropriate because group play can support children's social, motor, and creative development (Humayrah et al., 2022). Because children differ in their abilities and developmental levels, attractive learning media are needed to facilitate the delivery and acceptance of educational material. In this study, the Ular Naga Panjang game was used as a medium for oral and dental health education (Situmorang et al., 2025).

Oral health habits should be established from an early age because childhood is an appropriate period for instilling values and habits that support positive health behavior (Herawati et al., 2022). Accordingly, the Ular Naga Panjang game used in this study incorporated messages about foods that are beneficial or harmful to dental health, as well as appropriate ways to maintain oral and dental health. After the intervention, all 40 Class A and B students (100%) were categorized as having good knowledge. This increase suggests that an enjoyable game can be an effective medium for delivering oral health information in a form that is easier for children to understand.

During the Ular Naga Panjang learning activity, the students actively followed the game instructions, cooperated with their peers, sang together, and answered questions posed by the researchers. These observations indicate that oral health messages could be delivered effectively through the activity. The mean knowledge score increased from 59.00 before the intervention to 85.25 after the intervention.

This finding is consistent with (Martony et al., 2020), who reported that the use of a snakes-and-ladders game influenced children's knowledge and attitudes. Their study reported p = 0.000 (<0.05), indicating a significant effect of game-based media on children's understanding. Thus, game-based learning can be used as an educational medium for delivering health information to children.

In addition to the increase in knowledge, the researchers observed active participation and social interaction during the activity. Before the intervention, some children were categorized as having poor knowledge, whereas after participating in the Ular Naga Panjang activity, all children achieved the good-knowledge category. The students demonstrated high enthusiasm and interest, actively participated in the game, cooperated with their peers, and followed the rules throughout the approximately 20-minute activity.

Learning methods are important components in achieving educational objectives because they substantially support the success of the learning process. The Ular Naga Panjang game is designed according to children's characteristics and needs, creating an enjoyable and interactive learning environment (Efendi

et al., 2023). The game enables children to understand learning material through activities involving movement, cooperation, and communication. Learning is more likely to be effective when activities are engaging and prevent boredom (Aminaha & Fauzi, 2023).

The activity also suggested that the Ular Naga Panjang game may support children's social interaction, concentration, and confidence in interacting with peers. Direct play experiences can help children understand their surrounding environment concretely, which may provide a foundation for the development of thinking skills and knowledge (Nurilawaty et al., 2025).

CONCLUSION

Based on the research findings, it can be concluded that counseling using the Ular Naga Panjang game was effective in improving dental health knowledge among early childhood children

REFERENCES

Aini, T. D., Taftazani, R. Z., & Robbihi, H. I. (2022). Truth or Dare Game on the Knowledge and Skills of Brushing Teeth of Students in Class Iv Mi Ciledug Tasikmalaya City. *JDHT Journal of Dental Hygiene and Therapy*, *3*(2), 56–60. https://doi.org/10.36082/jdht.v3i2.613

Aminaha, S., & Fauzi, Z. A. (2023). *Meningkatkan Aktivitas , Berpikir Kritis Dan Komunikasi Menggunakan Model PBL , MGMTT Dan Permainan Ular Naga Di Kelas III SDN*. *01*(01), 46–55.

Andreastiti, P., & Widodo, Y. (2023). *Perbandingan Efektifitas Antara Media Busy Book Dan Media Scrapbook Dalam Meningkatkan Pengetahuan Anak Tentang Makanan Kariogenik Pada Anak Tk Anggrek Palembang*.

Artemisia, stephanie devi, Sriyanti, T., & Udianto, abi mas. (2025). *Menjaga kesehatan gigi dan mulut pada anak tk 3 kartini kemiren*.

Azwar, S. (2016). *Penyusun Skala Psikologi*.

Choirunnisa, A. (2023). *Does Dental Caries Affect the Quality of Life in Preschool Children*.

Efendi, Siswanto, J., & Rasiman. (2023). *Jurnal Pendidikan dan Konseling*. *5*, 5675–5684.

Herawati, A., Nina, Sari, A., Santoso, D., Brahmastha, F., Sitorus, G. G., & Setiawaty, S. (2022). Edukasi Kesehatan Gigi dan Mulut melalui Media Pembelajaran Berbasis Interaktif pada Siswa SDN Mekarjaya 11 Kota Depok Tahun 2022. *Jurnal Pengabdian Masyarakat*, *01*(04), 111–118.

Martony, O., Alfira, A., & Eliska, E. (2020). Meningkatkan Pengetahuan Kesehatan melalui Permainan Ular Tangga. *Jurnal Keperawatan Silampari*, *4*. https://doi.org/10.22146/jpsi

Nurilawaty, V., Harahap, N. N., & Karmawati, I. A. (2025). *Modul Ilmu Penyakit Gigi dan Mulut*.

Purnama, T., Ngatemi, N., Sofian, R., Kasihani, N. N., RE, P. R., & Nurbayani, S. (2020). Model 5 Days Gosgi sebagai upaya pembentukan kemandirian menggosok gigi anak usia dini di sekolah. Quality: Jurnal Kesehatan, 14(1), 19–24. https://doi.org/10.36082/qjk.v14i1.96

Rosa, L. H.-A., & Katherine, J. C.-C. (2024). *Clinical Consequences of Untreated Dental Caries in Young Children - An Evaluative Study*.

Ruslan, M. R. R., & Jayanti, P. A. (2025). *Hubungan Antara Perilaku Menyikat Gigi Dengan Tingkat Kematangan Plak Gigi Pada Siswa Sekolah Dasar*.

Siregar, A. Y. A., Dewanti, R. I., Khulwani, Q. W., Murti, B., & Aqsyari, R. (2024). *Determinants of Dental Caries in Children*.

Situmorang, M. F., Novita, W., Rini, E., Sari, P., & Azhary, M. R. (2025). *Permainan Ular Tangga Meningkatkan Pengetahuan dan Keterampilan Menyikat Gigi Anak Usia Dini*. *4*(April).

SKI. (2023). *survei kesehatan indonesia*.

Stuart, K. (2021). *Faktor-faktor biopsikososial yang menentukan kesejahteraan – sebuah rancangan/pedoman untuk mengatasi ketimpangan kesejahteraan*. *5*(3), 134–154.

Sumadewi, K. T., & Harkitasari, S. (2023). *Edukasi Kesehatan Gigi dan Mulut serta Cara Menggosok Gigi pada Anak Sekolah Dasar di Banjar Bukian, Desa Pelaga*.

WHO. (2022). *World Health Organization*.

Wowor, V. N. S., Bernadus, J. B. B., & Lumbangaol, G. M. P. (2025). *Hubungan Perilaku Menyikat Gigi dan Kejadian Karies Gigi pada Anak Usia Sekolah di Desa Wori*.