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The Relationship Between Parental Factors and Dental Caries in Children

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ABSTRACT

Based on the 2018 Basic Health Research (Riskesdas), 93% of preschool-aged children in Indonesia experience dental caries, indicating the crucial role of parents in establishing oral health habits from an early age. This study aimed to determine the relationship between caregiving factors and dental caries in children. An analytic cross-sectional survey design was used, conducted at the Posyandu in Sekip Lama Village under UPT Puskesmas Singkawang Tengah I, with a population of 84 participants selected through a total sampling technique. Research instruments included a caregiving behavior questionnaire, the child's age, the number of the child's teeth, the caregiver's educational background and occupation, as well as the caries index; data were analyzed using the Spearman correlation test. The results showed that most parents had caregiving behavior in the adequate category (69.3%), with an average behavior score of 18.71 ± 4.5; children had an average dmf-t index of 6.08 ± 4.9, at ages 12–60 months, and an average number of teeth of 17 ± 4.5. The Spearman test revealed a significant relationship between the severity of dental caries and the child's age, the number of teeth, the caregiver's educational level, and caregiving behavior ($p < 0.05$). It can be concluded that caregiving factors play an important role in children's oral health conditions, and parents are encouraged to be more proactive in fostering good oral hygiene habits from an early age.

Keywords: Childhood Dental Caries, Parenting Behavior.

ABSTRAK

Berdasarkan Riskesdas 2018, sebanyak 93% anak balita di Indonesia mengalami karies gigi, sehingga menunjukkan pentingnya peran orang tua dalam membentuk kebiasaan menjaga kesehatan gigi anak sejak dini. Penelitian ini bertujuan untuk mengetahui hubungan faktor pengasuhan dengan karies gigi anak. Penelitian menggunakan desain survei analitik cross-sectional yang dilakukan di Posyandu Kelurahan Sekip Lama UPT Puskesmas Singkawang Tengah I, dengan populasi 84 orang yang dipilih melalui teknik total sampling. Instrumen penelitian mencakup kuesioner perilaku pengasuhan, usia anak, jumlah gigi anak, pendidikan dan pekerjaan pengasuh, serta indeks karies, dan data dianalisis menggunakan uji korelasi Spearman. Hasil penelitian menunjukkan bahwa sebagian besar orang tua memiliki perilaku pengasuhan dalam kategori cukup (69,3%), dengan rata-rata skor perilaku 18,71 ± 4,5; anak memiliki rata-rata indeks dmf-t sebesar 6,08 ± 4,9, pada usia 12–60 bulan dan jumlah gigi rata-rata 17 ± 4,5. Uji Spearman menunjukkan adanya hubungan signifikan antara tingkat keparahan karies gigi anak dengan usia anak, jumlah gigi dalam mulut, tingkat pendidikan pengasuh, dan perilaku pengasuhan ($p < 0,05$). Dapat disimpulkan bahwa faktor pengasuhan berperan penting dalam kondisi kesehatan gigi anak, sehingga orang tua diharapkan lebih aktif menanamkan kebiasaan menjaga kebersihan gigi sejak dini.

Kata Kunci: Karies Gigi Anak, Perilaku Pengasuhan.

INTRODUCTION

Data from the 2018 Basic Health Research (Riskesdas) indicate that approximately 93% of Indonesian children under five experience dental caries (Badan Penelitian dan Pengembangan Kesehatan, 2019). In West Kalimantan, specific prevalence data on early childhood caries (ECC) remain limited; however, a study in Pontianak reported that only 20.9% of children aged 5–6 years were caries-free, meaning that nearly 80% had dental decay (Badan Penelitian dan Pengembangan Kesehatan, 2019). This prevalence is far below the targets set by the World Health Organization (WHO) and the World Dental Federation (FDI), which recommend that at least half of children aged 5–6 years should be free of caries (Phantumvanit et al., 2018; Chen et al., 2021; Uribe, Innes, & Maldupa, 2021; World Health Organization, 2022; Gaffar et al., 2024). These data highlight the persistence of ECC as a major public health problem in Indonesia.

Untreated caries can lead to serious complications, including impaired growth, chronic pain, and reduced quality of life in children (Alanzi et al., 2023; Bagis et al., 2023; Foláyan et al., 2023; Oliveira et al., 2023). Beyond physical health consequences, early childhood caries also affects children psychologically and socially. Pain caused by dental decay may result in traumatic eating experiences, decreased appetite, and impaired chewing function (Anderson, & Gopi-Firth, 2023; Paszynska et al., 2023; Gidlund et al., 2024). These conditions can interfere with nutrient absorption and lead to deficiencies in essential nutrients for dental health, such as vitamin A, calcium, and iron (Sumarni, & Bangkele, 2024). This wide-ranging impact underscores the need for effective early prevention strategies targeting the family environment.

According to the Health Belief Model, individual health behaviors including maternal behaviors related to child oral care are shaped by perceived risks, benefits, barriers, and self-efficacy (Rosenstock, 1974). Therefore, strengthening mothers' understanding of oral health, caries risks, and preventive practices is crucial. In addition, improving access to quality dental health services is needed to ensure that mothers can obtain preventive and curative oral care more easily (Rahmawati, 2021). These efforts must be aligned with community-level interventions because maternal behavior plays a central role in shaping children's early oral health habits.

Several previous studies Saputri, Sari, & Rahmadewi, (2021), have demonstrated a relationship between parental knowledge and behavior and children's oral health outcomes. However, gaps remain in the existing literature, particularly in understanding how specific maternal caregiving behaviors such as feeding practices, tooth-cleaning routines, and maternal access to oral health information directly correlate with dental caries in early childhood. Moreover, limited evidence is available from West Kalimantan, where ECC prevalence is high but research examining behavioral determinants remains scarce.

Given these gaps, the novelty of this study lies in its focus on maternal behavior as a comprehensive determinant of early childhood caries within the specific context of Posyandu service areas in West Kalimantan, which have not been widely explored in previous research. This study examines multiple components of maternal behavior simultaneously, offering a more holistic understanding of caregiving influences on ECC. The purpose of the present study is to analyze the relationship between maternal caregiving behavior and the incidence of dental caries among children aged 6–59 months in the Posyandu area of Sekip Lama Village, Singkawang City.

RESEARCH METHODS

The present study employed an analytic survey design with a cross-sectional approach. The research was conducted at Posyandu facilities in Sekip Lama Village, under the jurisdiction of UPT Puskesmas Singkawang Tengah I, Singkawang City. The study population comprised mothers with children aged 6–59 months who were registered across seven Posyandu units in the Sekip Lama area, totaling 84 individuals. A total sampling technique was applied, allowing all eligible individuals in the population to be included as research respondents.

Data were collected using structured questionnaires that assessed caregiving behaviors, the child's age, the number of erupted teeth, and the caregiver's educational background and occupation. The dental caries index of the children was also measured. Data analysis was performed using the Spearman correlation test to determine the relationship between caregiving

behaviors and dental caries incidence. Ethical approval for this study was obtained under approval number 127/KEPK-PKB/2025.

RESULTS

Table 1. Characteristics of respondents.

Variable	Sub Variable	N	Percentage(%)
Caregivers' occupation	Housewife	60	71.4
	Contract employee	6	7.1
	Entrepreneur	10	11.9
	Civil servant	8	9.5
Caregivers' level of education	Primary school	10	11.9
	Secondary school	11	13.1
	High school	43	51.2
	Undergraduate	20	23.8
Childrens' gender	Male	44	52.4
	Female	40	47.6

Table 1 shows that the majority of caregivers were housewives (71.4%) with a high school education level (51.2%). While the majority of the children were male (52.4%).

Table 2. Profile of caregivers' oral health practice toward children.

Oral health practice variables	Never	Sometimes	Always
Assisting the child with toothbrushing	17.9	54.8	27.4
Providing a fun and positive example	51.2	38.1	10.7
Wiping the child's teeth with cotton or gauze	26.2	50	23.8
Preparing the child's toothbrush and toothpaste	11.9	54.8	33.3
Limiting sugary foods	31	48.8	20.2
Providing vegetables and fruits at home	0	76.2	23.8
Checking the child's teeth	34.5	47.6	17.9
Rinsing with plain water after eating	33.3	45.2	21.4
Brushing teeth twice daily	26.2	61.9	11.9
Attending routine health check-ups	86.9	13.1	0

Table 2 shows that 86.9% of parents never took their children for routine dental check-ups and only visited the dentist when the child complained of tooth pain. Furthermore, only 10–33% of respondents consistently practiced recommended oral-health caregiving behaviors, such as assisting children with toothbrushing, providing positive role-modeling, wiping the child's teeth with cotton or gauze, preparing toothbrushes and toothpaste, limiting sugary foods, offering vegetables and fruits at home, checking the child's teeth, encouraging rinsing with water after meals, and ensuring that the child brushes their teeth twice a day.

Table 3. Characteristics of Caries Severity, Age, and Number of Teeth Among Children.

Characteristics	Minimum	Maximum	Mean	Std. Deviation
Caries	0	18	6.08	4.897
Children's age	12	60	35.87	13.214
Number of teeth in the child's mouth	4	20	17.73	4.543
Caregiving Behavior	12	27	18.71	4.509

Table 3 shows that the children had a mean dmf-t score of 6.08 ± 4.9, with ages ranging from 12 to 60 months, and an average of 17 ± 4.5 teeth present in the mouth. The mean caregiving behavior score was 18.71 ± 4.5, which falls into the moderate category (69.3%).

Table 4. Association Between Dental Caries and Age, Number of Teeth, Sex, Occupation, and Education Level of Parents (Spearman Test).

Variable Caries	Correlation Coefficient	Sig. (2-tailed)
Child's age	0.457	0.000

Variable Caries	Correlation Coefficient	Sig. (2-tailed)
Number of teeth	0.474	0.000
Caregiver's occupation	-0.149	0.149
Caregiver's level of education	-0.376	0.000
Child's Sex	-0.114	0.301
Caregiving behaviour	-0.853	0.000

Table 4 shows that dental caries are influenced by the child's age ($r = 0.457$, $p < 0.001$), the number of teeth ($r = 0.474$, $p < 0.001$), the caregiver's education level ($r = –0.376$, $p < 0.001$), and caregiving behavior ($r = –0.853$, $p < 0.001$).

DISCUSSION

The findings of this study indicate that most parents have not yet practiced optimal oral health caregiving behaviors for their children. Variables associated with dental caries in children included caregiving behavior, the caregiver's educational level, the child's age, and the number of teeth. Better caregiving behavior and higher maternal education were associated with lower caries levels in children. Conversely, increasing age and a greater number of teeth were associated with higher caries rates. Maternal employment status and the child's gender were not associated with caries severity.

It was found that many parents had not accustomed their children to brushing their teeth at the recommended times, namely after breakfast in the morning and before bedtime at night. In addition, most parents did not provide direct demonstration when teaching their children how to brush their teeth, nor had they established the activity as an enjoyable routine. This is crucial because children tend to imitate the daily behaviors of their parents. Furthermore, a large proportion of respondents did not take their children for dental check-ups every six months to monitor and maintain their oral health.

Childcare was carried out either by the mothers themselves or by other family members, such as grandmothers or relatives. Based on Table 1, the majority of caregivers in this study had a senior high school education or equivalent (51.2%). A significant association was identified between caregiver education and children's dental caries ($p = 0.000$; $cc = –0.376$). This negative association indicates that higher caregiver educational levels were associated with lower caries rates among their children. In this study, the strength of the association was moderate. It is expected that higher educational attainment would foster better caregiving behaviors, as mothers are presumed to have broader access to information and a deeper understanding of the importance of children's health. However, the field findings showed that higher formal education does not necessarily equate to better caregiving practices, particularly in maintaining children's oral health. Some mothers with senior high school education still appeared unaware of the urgency of oral hygiene care, possibly due to limited specific information, low concern, or the perception that dental health is not a primary priority in daily childcare. This suggests that even when mothers have the capacity to understand, without adequate awareness and willingness to act, knowledge does not translate into practice. In the context of children's oral health caregiving, it is essential for mothers not only to know what should be done, but also to develop awareness, concern, and the perception that oral health is an integral part of child development. For example, guiding children to brush their teeth regularly, limiting sugary foods, and attending routine dental check-ups. Without alignment between knowledge, attitudes, and practices, caries prevention efforts cannot be optimized. This aligns with Ermawati et al. (2024), who reported that maternal education and knowledge were not significantly associated with caries incidence in preschool children. Although mothers possessed adequate educational backgrounds and knowledge, these were not always reflected in daily caregiving practices. Therefore, preventing childhood caries must extend beyond educational background and incorporate strategies to foster parental awareness, motivation, and active involvement in building consistent oral hygiene habits.

Based on Table 1, most respondents in this study were housewives 60 individuals (71.4%). Theoretically, this high proportion provides opportunities for greater maternal involvement in caregiving, including establishing tooth-brushing routines, regulating diet, and monitoring oral hygiene. However, field findings indicated that being at home does not automatically ensure active

involvement in children's oral care. Some housewives perceived oral health as less of a priority and focused more on nutrition, immunization, or monitoring children's growth. Lower access to information compared to working mothers, or busyness with household chores that limits their time to access health information, also contributed to lower responsiveness toward oral health issues. Lack of direct information, irregular healthcare visits, and limited support from family members such as husbands or relatives further weakened attention to children's oral hygiene. Meanwhile, working mothers (civil servants, contract employees, or entrepreneurs), despite having limited time, were often more responsive to health information because they actively accessed digital media and kept up with health-related knowledge, including children's oral care. This indicates that occupation alone does not determine caregiving quality commitment, motivation, and understanding of caregiving roles are the key factors. This is supported by Lerner et al. (2022), who emphasized that effective parenting is shaped more by motivation and parental involvement than by employment status. Thus, although most mothers in this study did not have formal employment, this did not necessarily translate into good caregiving practices for children's oral health. Educational interventions that ensure equal access to health information for all mothers are needed to strengthen awareness, motivation, and engagement, regardless of employment status.

According to Table 2, most mothers fell into the category of poor caregiving behavior. This finding demonstrates that half of the mothers had not yet shown behaviors supportive of optimal oral health in their children. Several factors may explain this low caregiving performance. First, some mothers still had limited practical knowledge of specific oral health practices, such as brushing from the eruption of the first tooth, choosing fluoride toothpaste, and the importance of regular dental check-ups. This is consistent with previous findings from the same region, which showed that tooth-brushing habits influence caries occurrence (Rezki et al., 2024). Second, low caregiving behavior may also stem from a lack of awareness about the importance of primary teeth in child development, leading many mothers to view dental care in early childhood as a low priority. Third, limited time and attention due to household responsibilities may prevent mothers from consistently supervising children's tooth-brushing, especially in the morning and at night. Furthermore, despite having relatively good educational levels, this does not guarantee appropriate caregiving practices. Knowledge alone does not necessarily lead to action without environmental motivation, direct experience, or continuous information. This is supported by Fôlha et al. (2025), who found that mothers with good oral health behaviors tend to have children with lower caries risk. Similarly, Arora et al. (2021) reported that mothers' perceptions and attitudes significantly influence oral health behaviors at home. Effendi, Handayani, & Prihatiningrum (2024) also found that lack of parental supervision increases caries risk in children, especially in agro-industrial areas. Although Quek et al. (2021) stated that not all parenting styles are directly associated with caries, parental behavior remains a key factor in determining children's oral health. Thus, poor maternal caregiving behavior is not solely a matter of limited knowledge; it involves complex factors including awareness, priority setting, habits, and time constraints in daily life.

Table 3 shows that the average number of carious teeth among children aged 6 to 59 months was around 6 to 7 teeth. This number is considered high and exceeds what should be preventable in early childhood. Field observations revealed that most children did not have routine tooth-brushing practices at the appropriate times after breakfast and before bedtime. Many parents also had not introduced oral hygiene habits early, even before tooth eruption. Most mothers reported never cleaning the oral cavity using gauze before the first teeth appeared, nor did they take their children for regular dental check-ups. Moreover, some children were accustomed to consuming sugary foods or drinks before bed without brushing their teeth. These conditions indicate weak early prevention of caries and reflect limited parental knowledge and awareness regarding the importance of early oral care. This aligns with Huebner and Milgrom (2015), who emphasized that lack of parental understanding significantly contributes to plaque accumulation and bacterial growth. Tinanoff and Reisine (2009) further explained that prolonged exposure to sugary foods or drinks creates an oral environment conducive to bacterial growth, leading to caries. Biologically, Takahashi and Nyvad (2016) describe that bacteria such as

Streptococcus mutans ferment carbohydrates into acids, which erode enamel and cause demineralization.

Based on Table 4, the results indicate an association between childhood caries and caregiving behavior. Poorer caregiving behavior was associated with a higher likelihood of more severe caries. This underscores the critical role of mothers in shaping oral hygiene habits from an early age. With appropriate caregiving patterns, children can adopt good habits that prevent caries from early childhood (Angarita-Díaz et al., 2024). Moreover, parental involvement in children's daily routines strongly influences the formation of oral hygiene behaviors. The present study also highlights that one of the main risk factors for caries in West Kalimantan is caregiver behavior (Rezki, Siregar, & Halimah, 2022).

In conclusion, parental caregiving plays a crucial role in shaping children's oral health behaviors. The results clearly show that low-quality caregiving significantly increases the risk of early childhood caries. Therefore, establishing healthy habits from an early age especially brushing twice daily with proper technique, limiting sugary foods, and attending routine dental check-ups is essential for preventing caries.

CONCLUSION

There was a significant association between the severity of dental caries in children and the child's age, the number of teeth present, the caregiver's educational level, and caregiving behavior at the Posyandu of Sekip Lama, UPT Puskesmas Singkawang Tengah I. Parents are encouraged to be more proactive in fostering oral hygiene habits from an early age. The establishment of clean and healthy habits is essential from early childhood, particularly brushing teeth twice daily with proper technique, limiting the consumption of sugary foods and beverages, and ensuring regular dental check-ups.

REFERENCES

Alanzi, A., Husain, F., Husain, H., Hanif, A., & Baskaradoss, J. K. (2023). Does the severity of untreated dental caries of preschool children influence the oral health-related quality of life?. *BMC Oral Health,* 23(1), 552. https://doi.org/10.1186/s12903-023-03274-7

Anderson, S., & Gopi-Firth, S. (2023). Eating disorders and the role of the dental team. British Dental Journal, 234(6), 445-449. https://doi.org/10.1038/s41415-023-5619-x

Angarita-Díaz, M. D. P., Durán-Arismendy, E., Cabrera-Arango, C., Vásquez-Aldana, D., Bautista-Parra, V., Laguna-Moreno, J., & Mondragón-López, W. (2024). Enhancing knowledge, attitudes, and practices related to dental caries in mothers and caregivers of children through a neuroeducational strategy. *BMC Oral Health,* 24(1), 60. https://doi.org/10.1186/s12903-023-03734-0

Arora, A., Lucas, D., To, M., Chimoriya, R., Bhole, S., Tadakamadla, S. K., & Crall, J. J. (2021). How do mothers living in socially deprived communities perceive oral health of young children? A qualitative study. *International journal of environmental research and public health*, 18(7), 3521. https://doi.org/10.3390/ijerph18073521

Badan Penelitian dan Pengembangan Kesehatan. (2019*). Laporan Nasional Riskesdas 2018*. Jakarta: Badan Penelitian dan Pengembangan Kesehatan.

Bagis, E. E., Derelioglu, S. S., Sengül, F., & Yılmaz, S. (2023). The Effect of the Treatment of Severe Early Childhood Caries on growth-development and quality of life. *Children*, 10(2), 411. https://doi.org/10.3390/children10020411

Chen, J., Duangthip, D., Gao, S. S., Huang, F., Anthonappa, R., Oliveira, B. H., ... & Chu, C. H. (2021). Oral health policies to tackle the burden of early childhood caries: a review of 14 countries/regions. *Frontiers in Oral Health*, 2, 670154. https://doi.org/10.3389/froh.2021.670154

Effendi, F. Y. M., Handayani, A. T. W., & Prihatiningrum, B. (2024). Correlation between dental caries severity and oral health knowledge in children aged 9-12 years in the agroindustrial area: an analytical observational study. Jurnal Kedokteran Gigi Universitas Padjadjaran, 36(3), 272-280. https://doi.org/10.24198/jkg.v36i3.56364

Ermawati, E., Vidiarti, Y., Andesty, S.A., Tenri, A., & Pramarta, V. (2024). Hubungan Tingkat Pengetahuan Ibu Dan Tingkat Pendidikan Ibu Dengan Terjadinya Karies Gigi Pada Anak

Usia Pra Sekolah.*OBAT: Jurnal Riset Ilmu Farmasi dan Kesehatan,* 2(1), 85-92. https://doi.org/10.61132/obat.v2i1.109

Foláyan, M. O., Femi-Akinlosotu, O. M., Adeoti, B., & Olorunmoteni, O. E. (2023). Untreated early childhood caries and possible links with brain development. *BioMed,* 3(4), 431-439. https://doi.org/10.3390/biomed3040035

Gaffar, B., Schroth, R. J., Foláyan, M. O., Ramos-Gomez, F., & Virtanen, J. I. (2024). A global survey of national oral health policies and its coverage for young children. *Frontiers in Oral Health,* 5, 1362647. https://doi.org/10.3389/froh.2024.1362647

Gidlund, U., Hasselblad, T., Larsson-Gran, P., von Hausswolff-Juhlin, Y., & Dahllöf, G. (2024). Oral health experience of individuals with eating disorders. *Journal of Eating Disorders*, 12(1), 158. https://doi.org/10.1186/s40337-024-01117-6

Huebner, C. E., & Milgrom, P. (2015). Evaluation of a parent-designed programme to support tooth brushing of infants and young children. International journal of dental hygiene, 13(1), 65-73. https://doi.org/10.1111/idh.12100

Oliveira, T. T. D. V., Menegaz, A. M., Rosário, A. M. D., Romano, A. R., Schardosim, L. R., Mendes, F. M., ... & Azevedo, M. S. (2023). Impact of dental caries severity and activity on oral health-related quality of life among children aged 8-11 years. *Brazilian Oral Research*, 37, e41. https://doi.org/10.1590/1807-3107BOR-2023.vol37.0041

Lerner, R. E., Grolnick, W. S., Caruso, A. J., & Levitt, M. R. (2022). Parental involvement and children's academics: The roles of autonomy support and parents' motivation for involvement. Contemporary Educational Psychology, 68, 102039.

Fôlha, C. N., Karam, S. A., Schuch, H. S., Cenci, M. S., Domingues, M. R., da Silveira, M. F., & Demarco, F. F. (2025). Maternal oral health behaviors and status during pregnancy and child oral health: a study from a Brazilian birth Cohort. Journal of Dentistry, 106037. https://doi.org/10.1016/j.jdent.2025.106037

Pamewa, K., Ilmianti, I., & Kallang, M. A. (2023). Hubungan pola asuh ibu terhadap status karies gigi pada anak usia prasekolah di TK Bina Ilmu (Kecamatan Bengo, Kabupaten Bone, Tahun 2021). *DENThalib Journal,* 1(1), 18-22. Retrieved from: https://journal.fkg.umi.ac.id/index.php/denthalib/article/view/23

Paszynska, E., Hernik, A., Rangé, H., Amaechi, B. T., Gross, G. S., & Pawinska, M. (2023). Diet traps during eating disorders among dentate patients at an oral health glance. *Nutrients,* 15(20), 4414. https://doi.org/10.3390/nu15204414

Phantumvanit, P., Makino, Y., Ogawa, H., Rugg-Gunn, A., Moynihan, P., Petersen, P. E., ... & Ungchusak, C. (2018). WHO global consultation on public health intervention against early childhood caries. *Community dentistry and oral epidemiology*, 46(3), 280-287. https://doi.org/10.1111/cdoe.12362

Quek, S. J., Sim, Y. F., Lai, B., Lim, W., & Hong, C. H. (2021). The effect of parenting styles on enforcement of oral health behaviours in children. European Archives of Paediatric Dentistry, 22(1), 83-92. https://doi.org/10.1007/s40368-020-00537-7

Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health education monographs,* 2(4), 328-335.

Rezki, S., Sunardi, S., Aripin, D., Khayan, K., Pawarti, P., & Noeriman, A. R. (2024). Risk factors for dental caries: A case study in peatlands and non-peatlands of West Kalimantan, Indonesia. *Journal of Water and Health*, 22(2), 321-328. https://doi.org/10.2166/wh.2024.271

Rezki, S., Siregar, I. H., & Halimah, H. (2022). Drinking Water's Consumption in West Borneo's Peatlands Area: Causal Factors of Caries?. *Jurnal Kesehatan Gigi*, 9(1), 36-41. https://doi.org/10.31983/jkg.v9i1.8101

Saputri, N. I., Sari, A. D., & Rahmadewi, T. (2021). Hubungan Pengetahuan Dan Perilaku Perawatan Orang Tua Dengan Kesehatan Gigi Dan Mulut Pada Anak Usia 2-5 Tahun : Literature Review. *Skripsi.* Universitas 'Aisyiyah Yogyakarta.

Sumarni, S., & Bangkele, E. Y. (2024). Hubungan Status Gizi Dengan Karies Gigi Pada Anak Sekolah Dasar Di Kabupaten Sigi Sulawesi Tengah. *Healthy Tadulako Journal (Jurnal Kesehatan Tadulako),* 10(2), 331-335.

Takahashi, N., & Nyvad, B. J. C. R. (2008). Caries ecology revisited: microbial dynamics and the caries process. *Caries research*, 42(6), 409-418. https://doi.org/10.1159/000159604

Tinanoff, N., & Reisine, S. (2009). Update on early childhood caries since the Surgeon General's Report. *Academic pediatrics*, 9(6), 396-403. https://doi.org/10.1016/j.acap.2009.08.006

Uribe, S. E., Innes, N., & Maldupa, I. (2021). The global prevalence of early childhood caries: a systematic review with meta-analysis using the WHO diagnostic criteria. *International journal of paediatric dentistry,* 31(6), 817-830. https://doi.org/10.1111/ipd.12783

World Health Organization. (2022). *Global oral health status report: towards universal health coverage for oral health by 2030.* Geneva: World Health Organization.