ORIGINAL ARTICLE

Risk factors for early childhood caries in patients with cleft lip and palate: a descriptive study

Priskilla Kristiana Bella[1]
Asty Samiaty Setiawan[2]
Fidya Meditia Putri[2]

[1]Undergraduate Study Program, Faculty of Dentistry, Universitas Padjadjaran, Indonesia
[2]Department of Dental Public Health Faculty of Dentistry, Universitas Padjadjaran, Indonesia

*Correspondence:
asty.setiawan@unpad.ac.id

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ABSTRACT

Introduction: Cleft lip and/or palate is a common congenital defect. Children with this condition often experience abnormalities in the anatomical and morphological structures of the oral cavity, which contribute to poor oral hygiene and a lack of interest in maintaining dental care. Early Childhood Caries (ECC) is a prevalent dental health problem in patients with cleft lip and/or palate and is affected by factors such as sugary food consumption, oral hygiene habits, frequency and use of milk bottles, and parental socioeconomic status. This study aims to identify the risk factors for ECC in children with cleft lip and/or palate. **Methods**: This study employed descriptive research methods, using interviews with ECC risk factor questionnaires and purposive sampling based on Taro Yamane's formula, resulting in a sample of 91 parents of children diagnosed with cleft lip and/or palate. The questionnaires used in this research had undergone validity and reliability testing. The results were analyzed using frequency distribution. **Results**: The results of this research showed that most respondents had education level equivalent to junior high school or high school (51.65%). The respondents' average income was below 1.5 million as follows, accounting 47.25% of the sample. All respondents (100%) demonstrated good knowledge of maintaining their children's oral hygiene. However, the majority of respondents provided sweet foods (51.65%) and sweet drinks (43.65%) to their children 1-3 times per day. Additionally, 49.45% of respondents reported giving milk to their children before sleep, and 45,05% indicated that their children sometimes fell asleep eating without brushing teeth. **Conclusion**: The risk factors for ECC in patients with cleft lip and/or palate include parental education and income, children's habit of sleeping after eating without brushing their teeth, frequency of sugary foods consumption, frequency of formula milk consumption, and the practice of giving milk to children before bedtime.

KEYWORDS

Early childhood caries, risk factors, children with cleft lip and/or palate

INTRODUCTION

Cleft lip and cleft palate are two of the most common congenital defects. [1] Cleft lip result from incomplete fusion of the upper lip during fetal development, while cleft palate occurs due to incomplete fusion of the palate during fetal development, leading to a separation between the oral cavity ~~and~~ the nasal passage. [2] According to research conducted by Ittiwut, the global incidence of babies born with cleft lip and palate is approximately 1-2 per 1,000 births annually, with the highest incidence reported in Asia at around 1 per 500 births. [3] Children with cleft lip and/or palate often experience poor gum health, neglect dental care, have limited education about oral hygiene, and exhibit high rates of tooth decay. [4]

Children with cleft lip and/or palate often present with anomalies and malocclusion in the oral cavity, such as maxillary malformations, malocclusion, tooth malposition, and palatal fistula. [5,6] Patients with cleft lip and/or palate who have palatal fistula have a significantly higher incidence of poor oral hygiene. This is primarily due to difficulties in achieving optimal oral healthcare due to lack of access to brushing all teeth, reduced elasticity of surgically repaired lips, anatomical abnormalities, and fear of brushing around the fistula area.[7] Silvyani's research found that the prevalence of Early Childhood Caries (ECC) in children with cleft lip and/or palate was 46.08%. [8] Similarly, Zhou's research in China revealed that the prevalence of dental caries in children aged 3-5 years was 70.93%, which was higher than that of children without cleft lip and/or palate (66.87%).[9]

ECC, defined as the presence of one or more caries in primary teeth in children aged 0-72 months, is a common dental health problem in patients with cleft lip and/or palate.[10–12] Worth concluded that the incidence of dental caries in both primary and permanent teeth is significantly higher in children with cleft lip and/or palate compared to children without this condition. Good tooth-brushing techniques should be practiced, and parents need to be educated about proper oral hygiene and nutrition. [13]

The prevalence of ECC in normal children in 2016 ranged from 36-85% in Asia, 38-45% in Africa, and 22-61% in the Middle East. In Indonesia and Cambodia, the prevalence among children aged 3-5 years was 90%, with a def-t index of more than 6.[14]. The Indonesian Health Fundamental Research (Riskesdas) report in 2018 indicated that the prevalence of ECC in normal children aged 5 years in Indonesia was 90.2%.[15]

Sugar plays an important role in the development of ECC.[16,17] Sugar containing foods and beverages containing a good medium for the growth of cariogenic bacteria (*Streptococcus mutans, Streptococcus sobrinus,* and *Lactobacilli sp.*), thus allowing plaque formation that causes tooth decay.[18] Children's habits of sleeping with bottles and consuming sugary foods and beverages at bedtime without brushing may lead to higher risk of ECC development, caused by reduced salivary flow and low plaque pH.[19,20]

Parental socio-economic status and educational level influence of ECC by affecting environmental factors, the ability to provide food, access to healthcare, and children's educational opportunities. Regular dental visits are an essential form of primary prevention for dental caries. Developing a positive attitude towards visiting the dentist from an early age can encourage children to seek dental care, helping to prevent dental disease, particularly tooth decay.[21]

Early Childhood Caries (ECC), especially in patients with cleft lip and/or palate, can significantly affect the health and development of children's teeth and oral cavity.[22] Research on risk factors for ECC, both in Indonesia and abroad, has been conducted in children without abnormalities.[12,14,15] However, research specifically addressing risk factors for ECC in children with cleft lip and/or palate in Indonesia has not been conducted. This highlight the need for conducting research to identify the contributing factors to ECC risk in children with cleft lip and/or palate as a basis for early prevention efforts aimed at improving their quality of life. This study was conducted to determine the risk factors for ECC in children with cleft lip and/or palate.

METHODS

This study was a descriptive study conducted using a questionnaire interviews. The research used primary data collected through interviews with parents of patients with cleft lip and/or palate. The study was conducted in September 2023 at the Cleft Center of Yayasan Pembina Penderita Celah Bibir dan Langit-Langit (YPPCBL) Sekeloa, Bandung.

The population of this research included parents of patients with cleft lip and/or palate registered at Yayasan Pembina Celah Lip dan Langit-Langit (YPPCBL) Bandung

between 2018 and 2022 were the population of this research. The sampling technique employed a purposive sampling method. The minimum sample size was determined using the Taro Yamane formula, resulting in a sample size of 80 respondents.[23]

This research procedure began by collecting primary datathrough questionnaire interviews with respondents. The next step was the selection process based on the inclusion criteria. The inclusion criteria for this study were parents of children aged 0-72 months with cleft lip and/or palate who were registered at YPPCBL Bandung between 2018 and 2022 and who attended or were examined at YPPCBL during the research period.

The questionnaire was developed based on references aligned the predetermined research variables. It consisted of questions about parents' level of knowledge, tooth-brushing habit, children's feeding patterns, and dental visits. Face validity of the questionnaire was assessed prior to testing. A trial was conducted with 30 respondents, consisting of parents of cleft lip and palate patients at YPPCBL.[24] The validity test, using Pearson Correlation, showed that all question results were higher than the correlation coefficient value (0.361), indicating the questionnaire was valid. The reliability test using Cronbach's Alpha (value >0.7) was 0.871, confirming the questionnaire's reliability.

The results of the questions regarding the level of parental knowledge were analyzed using frequency distribution, followed by the calculation of the mean. Categories were grouped based on the type of response using a range of values: respondents who answered correctly > 11 were classified as having good knowledge, those with 5-10 correct answers were classifies ad having sufficient knowledge, and those with <5 correct answers were classified as having deficient knowledge.[25] The data were then analyzed using the frequency distribution method in Microsoft Excel, yielding the frequency and percentage for each variable. The analyzed data were presented in tables.

RESULTS

This research was conducted by distributing questionnaires to parents of children with cleft lip and/or palate. A total of 91 respondents were obtained from parents of patients who visited and registered at YPPCBL Bandung between 2018 and 2022.

Table 1. Distribution of child characteristics by gender, age, and cleft diagnosis (n =91)

Variable		Frequency	Percentage (%)
Child gender	Female	58	63.74
	Male	33	36.26
Child age	0-2	30	32.97
	2-4	39	42.86
	4-6	22	24.18
Cleft diagnosis	Labioschizis	26	28.57
	Palatoschisis	41	45.05
	Labiopalatoschisis	24	26.37

The distribution results in Table 1 consist of children of parents who participated in the study during the research period. Based on gender, majority of children were female (63.74%). Age characteristics showed that most children were in the age range of 2-4 years (42.86%). Regarding diagnosis, the majority of children were diagnosed with palatoschisis (45.05%).

Table 2. Distribution of respondents based on respondent characteristics (n =91)

Variable		Frequency	Percentage (%)
Parents' occupation	Female	80	87.91
	Male	11	12.09
Parents' education level	0-2	0	0
	2-4	5	5.49
	4-6	47	51.65
Parents' income	Less than 1.5 million IDR	39	42.86
	1.5- 3.5 million IDR	43	47.25
	More than 1.5 million IDR	36	39.56

Table 2 shows the distribution results based on parental characteristics. The majority of parents were employed (87.91%), with the most earning less than 1.5 million IDR per month (47.25%). The education level of most parentswas at the junior high school or high school level (51.65%).

Table 3. Distribution of parents' knowledge about maintaining children's oral hygiene

No.	Statement	Correct		Wrong	
		n	%	n	%
1.	Brushing your teeth can clean the bacteria that caus cavities	91	100	91	100
2	Gargling after meals can help clean the oral cavity	91	100	91	100
3.	Seeing a dentist every 6 months can help in the effo to maintain oral hygiene	89	97.8	89	97.8
4.	Cavities should be treated immediately	89	97.8	89	97.8
5.	Toothbrushes should be replaced regularly	91	100	91	100
6.	Children should not eat anything after brushing their teeth at night	91	100	91	100
7.	Children should start brushing as soon as the first tooth appears	88	96.7	88	96.7
8.	Bottle-feeding until the child falls asleep can increase cavity-causing bacteria	83	91.2	83	91.2
9.	Excessive consumption of sugary foods & drinks can lead to cavities	91	100	91	100
10.	Brushing your teeth every day and every night after meals	91	100	91	100
11.	The use of fluoride toothpaste can help inhibit the development of cavity-causing bacteria	91	100	91	100
12.	Untreated cavities can interfere with a child's facial and jaw development	88	96.7	88	96.7
13.	Children should be accompanied when brushing thei teeth	89	97.8	89	97.8
	Average	**89.5**	**98.31**	**89.5**	**98.31**

Table 3 presents the results of the research on parents' knowledge of children's oral hygiene. All respondents (100%) correctly answered the statements regarding the use of fluoride toothpaste, the correct time and method of brushing teeth, the use of mouthwash, and the consumption of sweet foods and drinks (Items 1, 2, 5, 6, 9, 10, and 11). Most respondents (96.7% and 97.8%) answered correctly to the statements about visiting the dentist and brushing teeth for the first time (Items 3, 4, 7, 12, and 13). The statement with the lowest percentage of correct answers was related to bottle-feeding until the child falls asleep (91.2%). On average, 98,1% of respondents answered correctly regarding children's oral hygiene, while 1.69% answered incorrectly.

Table 4. Distribution of parents' knowledge about maintaining children's oral hygienein categories

Category	Frequency (N)	Percentage (%)
Good (≥ 76-100%)	91	100
Fair (56-75%)	0	0
Less (≤ 55%)	0	0

Table 4 presents the distribution of parental knowledge categories. All respondents (100%) demonstrated good knowledge about maintaining oral hygiene in children.

Table 5. Distribution of respondents based on children's oral hygiene habits and consumption of sugar-containing foods-beverages

Variables		Frequency (N)	Percentage (%)
Toothbrush frequency	2 times or more	73	80.22
	1 time	8	8.79
	Rare	10	10.99
Types of toothpaste	Fluoride	68	74.73
	Non-fluoride	10	10.99
	Don't know	13	14.29
Habit of sleeping after eating/drinking without brushing your teeth	Always	12	13.19
	Sometimes	41	45.05
	Never	38	41.76
Consumption of sugar-containing foods in a day	3 times or more	25	27.47
	1-3 times	47	51.65
	Rare	19	20.88
Consumption of sugar-containing beverages in a day	3 times or more	13	14.29
	1-3 times	40	43.96
	Rare	38	41.76

Table 5 shows the distribution of children's oral hygiene habits and daily consumption of sugary foods and beverages. A total of 80.22% of children brushed their teeth two or more times per day, and 74.73% used fluoride toothpaste. However, 45.05% of respondents reported sometimes allowing their children to go to sleep after eating or drinking without brushing their teeth. Additionally, 51.65%of respondents reported their children consumed sugar-containing foods, while 43.96% reported sugary drink consumption 1-3 times a day.

Table 6 presents the respondents' milk-feeding habits. A total of 80.22% of respondents breastfed their children, while the remaining 19.78% used formula milk through bottle feeding. Among those who breastfed, 61.64% did so for less than one year, while 38.36% breastfed for more than one year. Most respondents (80.82%) reported bottle fed their children three times a day (47.46%). In contrast, 61.11% of respondents who provided formula milk fed their children more than three times a day . Additionally, 45.05% of respondents always gave bottles of milk to their children before bedtime.

Table 6. Distribution of respondents based on behaviour in giving milk to children

Variables		Frequency (N)	Percentage (%)
Breastfeeding in children	Yes	73	80.22
	No	18	19.78
Duration of breastfeeding in children	Less than 1 year	45	61.64
	More than 1 year	28	38.36
Use of bottles in breastfeeding	Yes	59	80.82
	No	14	19.18
Frequency of bottle feeding in a day	More than 3 times	18	30.51
	3 times	28	47.46
	Less than 3 times	13	22.03
Feeding milk other than breastfeeding	Formula	18	100
	Whole milk	0	0
Use of feeding bottles in feeding other than breastfeeding	Yes	18	100
	No	0	0
Frequency of bottle feeding in a day	More than 3 times	11	61.11
	3 times	4	22.22
	Less than 3 times	3	16.67
Frequency of bottle feeding before bedtime	Always	45	49.45
	Sometimes	36	39.56
	Never	10	10.99

Table 7. Distribution of respondents based on current child milk feeding

Variable		Frequency	Percentage (%)
Do the children still drink milk?	Yes	91	100
	No	0	0
Type milk given to children	Breastmilk	21	23.08
	Formula	57	62.64
	Pure milk	13	14.29
Frequency of children drinking milk	Every day	26	28.57
	Every week	62	68.13
	Rare	3	3.30

Table 7 presents the results of current milk-feeding practices. All respondents (100%) reported that they still provided milk to their children, with the formula milk being the most common given type (64.64%). In terms of frequency, the majority of children (68.13%) consumed milk several times a week.

Table 8. Distribution Based on Dental Visits

Variable		Frequency	Percentage (%)
Dental visits	Ever	71	78.02
	Never	20	21.98
Reasons for dental visits	There are complaints / pain	30	42.25
	Routine check-ups	41	57.75
Frequency of dental visits	Every month	3	3.30
	More than once a month	9	9.89
	6 months 1 time	62	68.13
	Never	17	18.68

Table 8 presents the results related to dental visits. Most respondents (78.02%) reported having visited the dentist, with 57.75% attending for routine check-ups (57.75%). Additionally, 68% of respondents indicated that they visited the dentist once every six months.

DISCUSSION

Table 1 presents the distribution of results based on children's characteristics. Regarding gender, most children were female (63.74%). A study by Reza et al., states that both male and female children have the same risk of developing early childhood caries (ECC) .[26] Most children were in the age range of 2-4 years (42.86%). Febriana's study revealed that the older children have a higher risk of developing ECC.[27] In terms of diagnosis, the majority of respondents (45.05%) were diagnosed with palatoschisis. Chapple's study showed no significant relationship between ECC and the classification of cleft lip and/or palate.[28]

Early childhood caries (ECC) can occur in children of parents with low socioeconomic status. Factors contributing to the high prevalence of ECC in these children include improper nutrition, low dental health knowledge and limited access to dental health services.[29] Regarding occupation, 87.11% parents were employed. Ridha's research found no significant relationship between the employment status of parents and the occurrence of ECC.[30] The highest level of parental education was at the junior or senior high school(51.65%). Berliana's research results showed a correlation between parental education level and the incidence of ECC in children.[31] Parents with higher levels of education are more likely to have easy access to information about tooth decay, including its causes and the necessary treatments for children's dental health.[32]

Socioeconomic status can influence dental hygiene behaviour as well as the consumption of cariogenic foods and beverages.[29] As shown in Table 2, most respondents (47.25%) had an income of less than 1.5 million IDR. According to the Central Statistics Agency (BPS), low income is defined as an average monthly income below Rp. 1,500,000.[33] Research by Inne aligns with these findings, showing a relationship between parental income and the incidence of ECC. Low-income affects food and drink choices and limits access to appropriate health services.[34]

The average results in Table 3 show that the percentage of correct answers was 98.31%, and according to Table 4, all respondents (100%) demonstrated good knowledge regarding the maintenance of oral hygiene in children. Parental knowledge about oral health is essential in helping children develop the habit of cleaning their teeth.[35] Research by Rizka's indicates a correlation between parental knowledge and the incidence of dental caries in children.[36] Sarmento's research states that parents' knowledge of health behaviour can enhance their ability to supervise their children's oral hygiene. A lack of parental knowledge regarding the impact of diet on dental caries development can lead to increased consumption of sugary foods and drinks, which in turn raises children's exposure to dental caries.[37]

Oral hygiene has been identified as one of the risk factors for Early Childhood Caries (ECC). Oral hygiene behaviours, such as tooth brushing methods, brushing under parental supervision, and the daily use of fluoride toothpaste, have been shown to significantly reduce the prevalence of ECC.[38] As shown in Table 5, most children brush their teeth twice a day (80.22%) and use fluoride toothpaste (74.73%). Zhafirah's research aligns with these findings, showing that children who brush their teeth twice a day have a lower def-t index (1.5) compared to those who brush their teeth once a day or do not brush their teeth.[38] Olatosi explained that children who use fluoride toothpaste experience lower caries.[39] Additionally, 45.05% of respondents reported that children sometimes went to sleep after eating or drinking without brushing their teeth. Febriana's study found that children who do not brush their teeth before bedtime have twice the risk of developing ECC compared to children who always brush their teeth.[27]

Early childhood caries (ECC) occurs in children who tend to prefer sugary foods and drinks. In general, children's oral hygiene is poorer because they consume more cariogenic foods and drinks than adults.[40] As shown in Table 5, children consume sugary foods and drinks 1-3 times a day, at 51.65% and 43.96% respectively. This research is consistent with research by Novalia, which found a relationship between the consumption of sugary foods and beverages and the incidence of dental caries.[40]

Febriana explained that children who consumed sugar-containing foods and drinks less than 3 times a day had a 2.94 times higher risk of experiencing ECC, and those consuming ≥ 3 times a day had a 3.43 times higher risk , compared to those who did not consume. The data explained that cariogenic foods or beverages should not be given to children under 4 years of age more than twice a day, unless followed by tooth brushing to prevent plaque accumulation.[27]

According to Table 6, 80.22% of respondents gave breast milk, while 19.78% provided formula milk. Most respondents (61.64%) breastfed for less than 1 year. Breastfeeding can delay and reduce the intake of cariogenic foods and drinks, thus reducing the severity of caries.[41] Dilla's research showed a significant relationship between the duration of breastfeeding and the severity of ECC in children.[42] Kubota's research found that the prevalence and incidence of ECC were higher in children who were breastfed for more than 18 months compared to those breastfed for less than 18 months (p=0.022).[43] Additionally, 47.46% of respondents gave breast milk three times a day, and 80.82% used bottles. However, Anita's research found no relationship between the frequency of breastfeeding and the use of bottles on the occurrence of ECC.[44]

As shown in Table 6, the majority of respondents (61.11%) gave formula milk more than three times a day. This finding is in line with Erilana's research, which showed that children who drink formula milk more than three times a day have a 9.667 times higher risk of dental caries than compared to those who consume formula milk three 3 times or less per day. [45] Additionally, most respondents (49.45%) always gave bottle milk at night before bedtime. Erliana explained that drinking milk at night is a risk factor for dental caries in children.[45] Drinking milk without brushing teeth before going to bed increases the risk of dental caries because the bacteria responsible for plaque are more active at night, and saliva flow decreases during sleep.[45,46]

Table 7 shows that all respondents still give milk to their children, with the majority (62.64%) using formula milk. Most respondents (68.13%) gave milk every week. This finding is in line with Salsabila, et.al.'s research, which suggests that parents continue to give milk to their children due to their social characteristics and the decision of using formula feeding.[47] Factors related to Mother's Decision in Giving Formula Milk to Infants Aged 0-24 Months at Puskesmas Merdeka, Bogor City.

The Canadian Academy of Pediatric Dentistry and the American Academy of Pediatric Dentistry recommend that children should have their first dental visit by 12 months of age.[11] Routine dental visits from an early age allow the dentist to assess the condition of newly erupted teeth and detect caries before they progress to a stage where non-surgical treatment is still possibel.[48] Most respondents (57.75%) visited the dentist for routine check-ups, with the highest frequency occurring once every 6 months (68.13%). Routine dental visits from an early age help dentists assess the condition of newly erupted teeth and detect caries problems before yjey require sirgucal intervention.[48] Joel H and Rebbeca's research showed that regular dental visits at 6 months were associated with a reduced risk of ECC.[49] Amalia's research also showed a significant association between dental visits and ECC (p=0.000 and OR=11.000 (95% CI 1.697-71.282)).[50]

This study has limitations due to its descriptive nature; however, the research data serve as a basis for analytical research in future studies. The majority of respondents were from middle to lower socio-economic background, resulting in a lack of socio-economic diversity. Future research is recommended to be conducted in other settings using comparative research designs with analytical tests (comparative studies) within the same population, and comparison with respondents without abnormalities. Additionally, further research should consider conducting clinical examination of the children's oral cavities to explore the relationship between risk factors for early childhood caries in children with cleft lip and / or palate.

CONCLUSION

The risk factors for early childhood caries (ECC) in patients with cleft lip and palate that need to be considered include parental education and income, frequency of of sugary foods and drinks consumption, children's behavior of sleeping after eating or drinking without brushing their teeth, the frequency of formula milk consumption, and the habit of giving milk to children before bedtime. These findings highlight the importance of identifying the risk factors in order to implement early preventative measures forECC in children with cleft lip and palate.

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REFERENCES

1. Leslie EJ, Marazita ML. Genetics of cleft lip and cleft palate. Am J Med Genet C Semin Med Genet. 2014 Nov;163(4):246–58. https://doi.org/10.1002/ajmg.c.31381
2. Parameters: For Evaluation and Treatment of Patients with Cleft Lip/Palate or Other Craniofacial Differences. Cleft Palate-Craniofacial J. 2018;55(1):141. https://doi.org/10.1177/1055665617739564
3. Ittiwut R, Siriwan P, Suphapeetiporn K, Shotelersuk V. Epidemiology of cleft lip with or without cleft palate inThais. Asian Biomedicine. 2016 Aug 1;10(4):335–8. https://doi.org/10.5372/1905-7415.1004.495
4. Nirmala S. Dental concerns of children with lip cleft and palate - a review. J Pediatr Neonatal Care. 2018 Jul 19;8(4). https://doi.org/10.15406/jpnc.2018.08.00333
5. Kamble S, Hiremath SS, Puranik MP, Gaikwad R, Biradar A, Gadbail AR, et al. Dental caries and dental anomalies in children with cleft lip and cleft palate in Bengaluru city, India. World Journal of Dentistry. 2017 Jul 1;8(4):304–8. https://doi.org/10.5005/jp-journals-10015-1455
6. Nguyen VT, Nguyen HL, Nguyen T, Jagomägi T. Oral Health Status of Patients with Repaired Cleft Lip and Palate in Central Vietnam. Oral Health Prev Dent. 2019;17(5):457–63.
7. Weraarchakul W, Weraarchakul W. Dental Caries in Children with Cleft Lip and Palate. Vol. 100, J Med Assoc Thai. 2017.
8. Silvyani JT, Setiawan AS, Putri FM. Early childhood caries prevalence among children with cleft lip and palate at padjadjaran university dental hospital. Odonto : Dent J. 2022 Dec 28;9(2):247. https://doi.org/10.30659/odj.9.2.247-257
9. Zhu WC, Xiao J, Liu Y, Wu J, Li JY. Caries experience in individuals with cleft lip and/or palate in China. Cleft Palate-Craniofacial J. 2015 Jan;47(1):43–7. https://doi.org/10.1597/07-076.1
10. Sari M, Yuyud Yudhatama. Pola Asuh Orang Tua terhadap Kejadian ECC (Early Childhood Caries) pada Anak Usia 3-5 Di Kelurahan Purwosari Kota Surakarta. URECOL. 2017 ;303–10. Available from: https://journal.unimma.ac.id/index.php/urecol/article/view/1344
11. American Academy of Pediatric Dentistry. THE REFERENCE MANUAL OF PEDIATRIC DENTISTRY [Internet]. Chicago; 2014. Available from: http://earlychildhoodcariesresourcecenter.elsevier.com
12. Wayan N, Program M, Dokter S, Fakultas G, Universitas K, Manado S. PENCEGAHAN DAN PERAWATAN KARIES RAMPAN [Internet]. Available from: https://ejournal.unsrat.ac.id/index.php/biomedik/article/viewFile/7288/6790
13. Worth V, Perry R, Ireland T, Wills AK, Sandy J, Ness A. Are people with an orofacial cleft at a higher risk of dental caries? A systematic review and meta-analysis. Br Dent J. 2017 Jul 7;223(1):37–47. https://doi.org/10.1038/sj.bdj.2017.581
14. Phantumvanit P, Makino Y, Ogawa H, Rugg-Gunn A, Moynihan P, Petersen PE, et al. WHO Global Consultation on Public Health Intervention against Early Childhood Caries. Community Dent Oral Epidemiol. 2018 Jun 1;46(3):280–7. https://doi.org/10.1111/cdoe.12362
15. Riskesdas. Laporan Riskesdas 2018 Nasional. 2018.
16. Chaffee BW, Gansky SA, Weintraub JA, Featherstone JDB, Ramos-Gomez FJ. Maternal oral bacterial levels predict early childhood caries development. J Dent Res. 2014 Mar;93(3):238–44. https://doi.org/10.1177/0022034513517713
17. Childers NK, Momeni SS, Whiddon J, Moser SA. Association Between Early Childhood Caries and Colonization with Streptococcus mutans Genotypes From Mothers. Pediatric Dentistry. 2017 Mar 15;39(2):130–5. Available from: https://www.researchgate.net/publication/318350597_Association_Between_Early_Childhood_Caries_and_Colonization_with_Streptococcus_mutans_Genotypes_From_Mothers
18. Plonka KA, Pukallus ML, Barnett AG, Holcombe TF, Walsh LJ, Seow WK. A longitudinal case-control study of caries development from birth to 36 months. Caries Res. 2014;47(2):117–27. https://doi.org/10.1159/000345073

19. Ghaitsa Ghaitsa, Widodo Widodo, Rosihan Adhani. Perbandingan indeks karies antara anak yang mengkonsumsi susu botol dengan tanpa botol usia 2-5 tahun Tinjauan Playgroup Islam Terpadu Ukhuwah Banjarmasin. 2017 Sep 15;2(2):205–10.http://dx.doi.org/10.20527/dentino.v2i2.4001
20. Mahboobi Z, Pakdaman A, Yazdani R, Azadbakht L, Montazeri A. Dietary free sugar and dental caries in children: A systematic review of longitudinal studies. Vol. 11, Health Promotion Perspectives. Tabriz University of Medical Sciences; 2021. p. 271–80. https://doi.org/10.34172/hpp.2021.35
21. Priyoto. Teori sikap dan perilaku dalam kesehatan : dilengkapi contoh kuesioner. 1st ed. Vol. 1. Nuha Medika; 2014. 1–304 p.
22. Kawalec A, Nelke K, Pawlas K, Gerber H. Risk factors involved in orofacial cleft predisposition-review. Open Medicine (Poland). 2015 Jan 1;10(1):163–75. https://doi.org/10.1515/med-2015-0027
23. Riduwan S. Pengantar statistika untuk penelitian : pendidikan,sosial, komunikasi, ekonomi dan bisnis. 7th ed. Akdon, editor. Bandung : Alfabeta; 2014. 65 p.
24. Samiaty SA, Rina DR, Susilawati S. Studi epidemiologi dento-sosio determinan dengan pendekatan biomolekuler untuk mengetahui prediktor early chilhood caries pada anak usia 2-3 tahun. 2019;55–6. Universitas Indonesia Library. Fakultas Kedokteran Gigi Universitas Indonesia; 2019. Available from: https://lib.ui.ac.id/detail?id=20496415&lokasi=lokal
25. Suharsimi A. Prosedur penelitian: suatu pendekatan praktik. 14th ed. Rineka Cipta; 2013.
26. Romdona R. faktor-faktor yang berhubungan dengan kejadian early childhood caries (ecc) pada anak usia prasekolah di paud kulawargi desa andamui kabupaten kuningan tahun 2022 - repository stikku. Stikkuacid. 2022 ; Available from: http://eprints.stikku.ac.id/190/
27. Febriana S, examiner. Peran pola pemberian air susu ibu (ASI) dalam pencegahan early childhood caries (ECC) di DKI Jakarta. Universitas Indonesia Library. Fakultas Kedokteran Gigi Universitas Indonesia; 2024. Available from: https://lib.ui.ac.id/detail?id=20306780&lokasi=lokal
28. Silvyani JT, Setiawan AS, Putri FM. Early childhood caries prevalence among children with cleft lip and palate at padjadjaran university dental hospital. Odonto : Dent J. 2022 Dec 28;9(2):247.https://doi.org/10.30659/odj.9.2.247-257
29. Bencze Z, Mahrouseh N, Andrade CAS, Kovács N, Varga O. The burden of early childhood caries in children under 5 years old in the european union and associated risk factors: An ecological study. Nutrients. 2021 Feb 1;13(2):1–12. https://doi.org/10.3390/nu13020455
30. Hidayati R, Yulia A, Firstita Ario E. Faktor-Faktor yang Mempengaruhi Peran Orang Tua dalam Perawatan Gigi dan Mulut dengan Kejadian Karies Gigi pada Anak Usia Sekolah Dasar di RW 03 Kelurahan Sawahan Timur Kecamatan Padang Timur Wilayah Kerja Puskesmas Andalas Tahun 2023. J Penelitian dan Kajian Ilmiah. 2024;18. https://doi.org/10.31869/mi.v18i2.4948
31. Afrianti BT, Nugroho C, Kesehatan Gigi Poltekkes Kemenkes Tasikmalaya J. Hubungan Tingkat Pendidikan Serta Pengetahuan Kesehatan Gigi Dan Mulut Orang Tua Dengan Kejadian Karies Dini Pada Anak Pra Sekolah di Raudhatul Athfal Nurul Furqon Kota Cirebon. J Ilmiah Keperawatan Gigi (JIKG) [Internet]. 2023;4(2). Available from: http://ejurnal.poltekkestasikmalaya.ac.id/index.php/jikg/index
32. Fahrurazi, Hayati R. Hubungan Pengetahuan Dan Tingkat Pendidikan Orang Tua Dengan Karies Pada Anak Sdn 4 Sei Besar Tahun 2016. Available from https://ppj.uniska-bjm.ac.id/wp-content/uploads/2019/04/Fahrurazi-HUBUNGAN-PENGETAHUAN-DAN-TINGKAT-PENDIDIKAN-ORANG-TUA-DENGAN-KARIES-PADA-ANAK-SDN-4-SEI-BESAR-TAHUN-2015.pdf
33. Badan Pusat Statistik. Statistik Pendapatan 2016. Badan Pusat Statistik, editor. Badan Pusat Statistik; 2016. 20–21 p.
34. Vony KFI, Prasetyowati S, Hadi S, Kesehatan Gigi J, Kesehatan Kemenkes Surabaya P. Pendapatan Orang Tua Dengan Kejadian Karies Gigi Anak Tk Dharma Wanita Persatuan Tambakrejo 1 (Studi di Kec.Krembung Kab.Sidoarjo). J Ilmiah Keperawatan Gigi (JIKG). 2022;3(2). Available from: http://ejurnal.poltekkestasikmalaya.ac.id/index.php/jikg/index
35. Kristiani A, Dewi TK, Sugesti H. Parental Knowledge and Behaviour About Dental And Oral Health Care With Early Childhood Caries Of 3-5 Years. Jdht J of Dental Hygiene And Therapy. 2023 Apr 4;4(1):63–9. https://doi.org/10.36082/jdht.v4i1.1009
36. Yulianti, Rizka P, Muhlisin A. Hubungan Antara Pengetahuan Orang Tua Tentang Kesehatan Gigi Dan Mulut Dengan Kejadian Karies Gigi Pada Anak Di SDN V Jaten Karanganyar. Umsacid. 2016; Available from: https://publikasiilmiah.ums.ac.id/handle/11617/3622
37. De Almeida Pinto-Sarmento TC, Abreu MH, Gomes MC, De Brito Costa EMM, Martins CC, Granville-Garcia AF, et al. Determinant factors of untreated dental caries and lesion activity in preschool children using ICDAS. PLoS One. 2016 Feb 1;11(2). https://doi.org/10.1371/journal.pone.0150116
38. Muharani NZ, Nofika R. Hubungan Oral Hygiene Habits dengan Early Childhood Caries (ECC) pada Balita Di Kota Padang. 2020. https://doi.org/10.25077/adj.v8i1.107
39. Olatosi OO, Sote EO. Causes and pattern of tooth loss in children and adolescents in a Nigerian tertiary hospital. Nigerian Quarterly J of Hospital Medicine. 2014 Feb 26;22(4):258–62. Available from: https://www.researchgate.net/publication/260380132_Causes_and_pattern_of_tooth_loss_in_children_and_adolescents_in_a_Nigerian_tertiary_hospital
40. Novalia E. Hubungan Konsumsi Makanan yang Mengandung Gula dengan Terjadinya Karies Gigi pada Anak. Lentera Perawat. 2020 ;1(1):31–6. Available from: https://www.neliti.com/publications/410065/hubungan-konsumsi-makanan-yang-mengandung-gula-dengan-terjadinya-karies-gigi-pad
41. Hafizhah SZ, Probosari N, Prihatiningrum B. Gambaran Indeks def-t Karies Rampan dan Early Childhood Caries Pada Balita Usia 2-5 Tahun yang Mengkonsumsi ASI dan Susu Formula di Desa Panduman, Kecamatan Jelbuk, Kabupaten Jember. Padj J of Dent Res and Stud. 2022 Feb 27;6(1):44. https://doi.org/10.24198/pjdrs.v6i1.34858
42. Fitri, D., Ristiono, B., & Hidayati, H. (2021). Hubungan Lama Pemberian ASI Dengan Tingkat Keparahan Karies Pada Anak Usia 1-2 Tahun Di Posyandu Wilayah Kerja Puskesmas Andalas Kota Padang. Andalas Dent J, 9(1), 10-18. https://doi.org/10.25077/adj.v9i1.185
43. Kubota Y, San Pech N, Durward C, Ogawa H. Association between Early Childhood Caries and Maternal Factors among 18- to 36-month-old Children in a Rural Area of Cambodia. Oral Health Prev Dent [Internet]. 2020 Oct 27;18(1):973–80. Available from: http://www.ncbi.nlm.nih.gov/pubmed/33215488
44. Rosa DA, Kusuma AS. Faktor Risiko Early Childhood Caries pada Anak UsiaPrasekolah di PAUD Kenanga 17 Kelurahan Penjaringan, Kecamatan Penjaringan, Jakarta Utara. Majalah Sainstekes. 2020 Dec 23;2(1):012–22.https://doi.org/10.33476/ms.v2i1.1637

45. Jingga Erliana, Setyawan Henry, Yuliawati Sri. Hubungan Pola Pemberian Susu Formula Dengan Kejadian Early Childhood Caries (Ecc) Pada Anak Prasekolah Di Tk Islam Diponegoro Kota Semarang [Internet]. Vol. 7. 2019. Available from: http://ejournal3.undip.ac.id/index.php/jkm
46. Putri M, Marlindayanti M, Ismalayani I. Gambaran frekuensi minum susu botol dengan kejadian rampan karies pada anak tk di kecamatan kalidoni. J Kesehatan Gigi dan Mulut (JKGM). 2020;2(2):19–22.
47. Salsabilla A, Anwar K, Syah MNH. Factors Related to Mother's Decision in Giving Formula Milk to Infants Aged 0-24 Months at Puskesmas Merdeka, Bogor City: Faktor-Faktor yang Berhubungan dengan Keputusan Ibu dalam Pemberian Susu Formula pada Bayi Usia 0-24 Bulan di Puskesmas Merdeka, Kota Bogor. AMNT. 2023 Dec. 31;7(2SP):58-64. https://doi.org/10.20473/amnt.v7i2SP.2023.58-64.
48. Annisa CM, Soetomo N, Naviatullaily Y. Gambaran Sikap Kunjungan Ke Dokter Gigi Dan Status Karies Siswa Kelas Vii (Usia 12-13 Tahun) Di Smp Negeri 3 Kecamatan Cepu Kabupaten Blora. 2016. Available from: https://eprints.ums.ac.id/43916/16/3%20halaman%20depan.pdf
49. Berg JH, Slayton RL. Early Childhood Oral Health. 1st ed. Berg JH, Slayton RL, editors. Vol. 1. Seattle: Willey-blackwell; 2014. https://doi.org/10.1002/9781119101741
50. Adnani H, Amalia Febbika. Analisis faktor risiko karies gigi anak prasekolah di taman kanak-kanak. Health Sciences and Pharmacy J. 2023 Dec 25;7(3):138–45. https://doi.org/10.32504/hspj.v7i3.908