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The Relationship between Cariogenic Foods and Dental Hygiene Status with Caries in Elementary School Children at Administrative Post of Dom Aleixo Dili Timor-Leste (2026).

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Abstract

Introduction: Dental caries is one of the most common diseases found at all social levels of the Timor-Leste population, either gender male, female, the elderly, adults, adolescents and children. Consuming foods that are cariogenic has an important role in the formation of caries in children aged 11-12 years. Cariogenic foods are soft foods, easily attached to the teeth so that they quickly damage the teeth.

Objective: To determine the relationship between cariogenic foods and dental hygiene status with the incidence of caries in elementary school children in Administrative Post Dom Aleixo Comoro Dili.

Methods: An analytic observational study with a cross-sectional design with a 300 sample size use consecutive sampling. Data collection using questionnaires check list and oral examination sheets. research data were analyzed by chi-square and regression logistic analysis

Results: The results showed that as many as 243 (81%) children had dental caries, while 57 (19%) children did not, with two influential variables, there are milk with a p value = 0.047, an OR value of 3.017 and candy with a p value = 0.008. , the OR value is 4,315. Cariogenic food and dental hygiene status associated with the incidence of caries.

Conclusion: There is a relationship between cariogenic foods (milk dan candy or sweets) have significant relation with incidence of caries in elementary school children in Administrative Post Dom Aleixo Comoro Dili. In addition, the dental hygine also play an important role related to the incidence of caries in elementary school children cited by (Tilman CB., et al, 2026).

Key words : Cariogenic Foods, Dental Hygiene, Caries and Dom Aleixo Comoro Dili

I. INTRODUCTION

Dental caries is a major public health problem globally and is the most widespread noncommunicable disease (NCD). It is also the most prevalent condition included in the 2015 Global Burden of Disease Study, ranking first for decay of permanent teeth (2.3 billion people)

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and 12th for deciduous teeth (560 million children)[1]. Dental caries is a disease that ranks fourth in the world as a disease that is expensive to treat and the sixth in the world of diseases that are often complained of by the public[2]. In general, children do not maintain good oral hygiene, so that they quickly cause caries when compared to adults. The most common cause of tooth decay is the use of granulated sugar in foods such as candy, snacks and sweet drinks. Sugar or sucrose undergoes a fermentation process involving microorganisms, the result of the fermentation obtains energy from the substrate by releasing sucrose and by-products in the form of alcohol compounds, so sugar is classified as having cariogenic compounds used in the manufacture of foods that are widely consumed by children[3].

The Center for Disease Control and Prevention reports that cavities have increased, there is an increase in dental caries from 24% to 28% in permanent teeth, while deciduous teeth or primary teeth have also increased to 70%, especially in toddlers and pre-school children[4]. As much as 98% of the world's population has experienced caries, it is necessary to know that cavities or caries are focal infections from the emergence of various systemic diseases, including heart and kidney disease (cited by (Tilman CB., et al, 2026)[5]. The public perception that caries is not a serious disease, so that the level of public awareness becomes less in maintaining dental and oral hygiene. People tend to place dental and oral health problems at the level of secondary and tertiary needs. Another study showed that there was a more complex relationship between the incidence of dental caries and dietary patterns in the form of intake of carbohydrates, vitamins, proteins, fats and minerals. In general, it is known that the current diet is still the main cause of tooth decay, where the etiology is caused by Streptococcus and Staphilococcus bacteria[6]. These bacteria can come from fermented food residues that are attached to the oral cavity and are also exacerbated in poor dental hygiene cited by (Tilman CB., et al, 2026). There are several factors that need to be considered in the form of behavior to maintain dental and oral hygiene, such as the consumption of low-carbohydrate foods, brushing techniques, proper use of fluoride, and regular dental check-ups.

Based on the theory of Parasitic Acidogenic Chemistry, that the degree of acidity depends on the content of carbohydrates eaten, the highest degree of acidity from food scraps containing sucrose attached to the teeth will occur in a process of fermentative change from normal flora bacteria in the mouth to lactic acid or pyruvic acid with glycolysis process, so that it affects changes in pH in the oral cavity. In general, the normal oral pH of 7.0 becomes more acidic and critical to pH 5.5, in this case parents are more careful in giving milk, both breastfeeding and bottled formula, because this causes the process of formation of the degree of acidity in the oral cavity and causes caries formation. rampant or early childhood caries in toddlers[7]. Children in elementary school are at risk of a high caries incidence, because at the age of 6-12 years is the phase of changing deciduous teeth and the growth of new permanent teeth and elementary school children spend most of their time in school. whereas in schools there are

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many foods and drinks that are cariogenic causing the pH of the oral cavity to be low, resulting in an increase in demineralization and a decrease in remineralization.

According to Elizabeth Shick (2014) countries in the South East Asia Regional (SEARO) often experience problems in improving dental and oral health, such as Timor Leste which is a developing country. in 2015 the population of Timor - Leste was estimated at 1,167,242 people and with a relatively low public health status[8]. In 2019 there was an increase in cases of cavities or dental caries in Timor - Leste with an estimated case of 40% of the entire population, where at that time there were only 7 dentists and assisted by 40 dental nurses with a ratio of 1: 27,018 population[9]. Dental caries is one of the most common diseases found at all social levels of the Timor-Leste population, in the elderly, adults, adolescents and children, so that a more in-depth study would be conducted on the relationship between cariogenic foods and dental hygiene status with caries in Elementary school children cited by (Tilman CB., et al, 2026).

Objectives

General objective : was to determine the relationship between cariogenic foods and dental hygiene status with the incidence of caries in elementary school children at Administrative Post Dom Aleixo Comoro Dili in 2026.

Specific objectives are:

- To determine the prevalence of dental caries in elementary school children;
- To find out the behavior of elementary school children in maintaining dental hygiene;
- To determine the relationship between cariogenic food types and the incidence of caries.
- To determine the relationship between dental hygiene and the incidence of caries.

II. THEORITICAL FRAMEWORK

Initial damage to the enamel layer, which then becomes caries is a demineralization process. The initial stage of caries formation is the formation of black spots that cannot be cleaned with a toothbrush and if the black spots are left unchecked they will get bigger and deeper so that it will cause death of the pulp and cause infection in the supporting tissues of the teeth and surrounding areas cited by (Tilman CB., et al, 2026)[10]. The following is a summary description of the process of dental caries formation:

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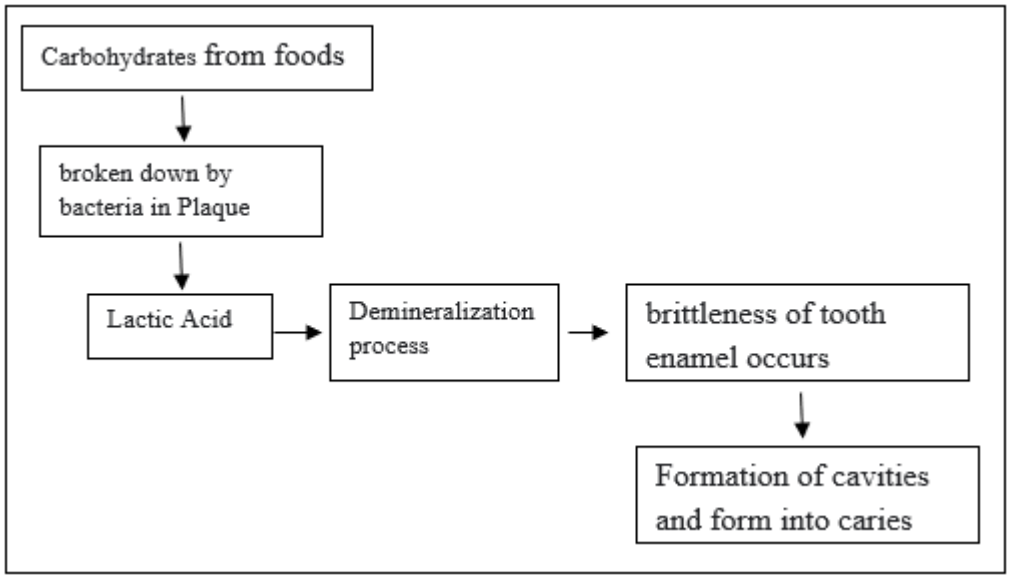

Figure 2.1: Caries Formation in Adaptec by Tilman CB., 2025

A study conducted and cited by (Al-Malik, 2016;Tilman CB., et al, 2026) in Saudi Arabia, with 300 respondents' children aged 6-7 years, the prevalence of 288 (96%) children had caries and the remaining 12 (4%) did not have dental caries, of the 288 respondents, 142 (49.3%) were girls and 146 (50.7%) were boys, so that the prevalence of caries was more in boys cited by (Tilman CB., et al, 2026)[11]. there are 4 main etiologies in the formation of caries, namely: host substrate, agent and time, in addition to these etiology there are also factors that indirectly affect the onset of caries, these factors are called predisposing factors. the pattern and type of diet the food consumed[12]. a person consumes foods that contain carbohydrates, then the salivary pH immediately decreases because the bacteria in the oral cavity produce acidic compounds, then the demineralization process is formed on the teeth, the process takes 15-30 minutes, during the eating process saliva begins to work in neutralizing acidic compounds. This results in the remineralization of the teeth. Consuming high carbohydrate foods can cause tooth enamel not be able to carry out the remineralization process properly, so small holes will occur in the teeth.

Dental caries result when plaque forms on the surface of a tooth and converts the free sugars (all sugars added to foods by the manufacturer, cook, or consumer, plus sugars naturally present in honey, syrups, and fruit juices) contained in foods and drinks into acids that destroy the tooth over time. There are continued high intake of free sugars, inadequate exposure to fluoride and a lack of removal of plaque by toothbrushing can lead to caries, pain and sometimes tooth loss and infection[13]. Foods that are soft and easily adhere to can damage teeth, generally contain sucrose. sucrose or monosaccharides and disaccharides are glucose derived from sugar or cane sugar. Chocolate contains 99.8% sucrose with 0.01-0.02% water content, 0.006-0.3% minerals

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and 0.03-0.2% invert sugar. Milk contains 62.5% sucrose and 4.8% lactose. other foods are ice cream containing 12-16% sucrose and milk 55-64% milk, while candy contains 62.25% sucrose. This causes children to tend to like cariogenic foods, because they are more delicious to eat without knowing the impact caused by neglecting oral and dental hygiene[14]. Healthy teeth are the state of the teeth in a clean condition, free from plaque and other impurities on the surface of the teeth, such as food debris, tartar and food debris and does not smell bad in the mouth. Here are simple ways to keep your teeth clean and healthy, namely; brushing teeth at least 2 times a day, avoiding sweet and soft foods and having regular dental check-ups every 6 months to the dentist. For dental and oral hygiene status, the measurement of the OHIS-S (Oral Hygiene Index Simplified) score was measured. Dental hygiene examination using the Green and Vermillion method, namely by adding up the Debris index and Tartar index. The debris index is the value of the soft deposits remaining and attached to the teeth due to the presence of these food residues. The tartar index is the value of the hard deposits that remain and adhere to the teeth due to the presence of these food residues is more understanding than implications in children's according to the study cited by (Tilman CB., et al, 2026).

III. RESEARCH METHODOLOGY

Use analytic observational study with cross-sectional design with consecutive sampling apprach. The scope of this research is the field of epidemiology of dental and oral diseases by analyzing the incidence of dental caries in elementary school children and their risk factors. Population is generalization composed of objects/subjects that have certain quantities and characteristics and are determined[15]. Total samples in this study were 300 samples. The sampling technique that was applied in this investigation was consecutive or quota sampling. The data collection instrument was used a questionnaires check list and oral examination sheets. For data analysis, we use descriptive statistics, bivariate analysis by chi-square (X^2) cross tabulation with significance (α) = 0.05 with confidential interval (CI) 95%. At least multivariate analysis by regression logistic analysis with odds ratio (OR) value and p value. Those analysis we use the computer program SPSS (Statistical Package for the Social Sciences 26 version) and the results are presented in table mentioned (Tilman CB., et al, 2026).

IV. RESULTS

Table 1. Description of the frequency distribution of research variables (Tooth decays, Dental hygiene status, foods and drinks)

Variables	N=300	%
Tooth Decays		
Caries lesion	243	81
No Caries lesion	57	19

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Dental Hygiene		
Good	56	18.7
Poor	244	81.3
Gargle		
Yes	63	79
No	237	21
Brushing teeth		
2x a day	201	67
1x a day	99	33
Brush your teeth at night		
Yes	60	20
No	240	80
Milk		
Drink often	247	82.3
Drink rarely	53	17.7
Soft Drink		
Drink often	229	76.3
Drink rarely	71	23.7
Cake		
Eat often	191	63.7
Eat rarely	109	36.3
Chocolate		
Eat often	205	68.3
Eat rarely	95	31.7
Ice Cream		
Eat often	223	74.3
Eat rarely	77	35.7

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Candies		
Eat often	237	79
Eat rarely	63	21
Fast foods		
Eat often	196	65.3
Eat rarely	104	34.7
Cheese and Nuts		
Eat often	114	38
Eat rarely	186	62

Table 1. Above shows there were caries lesion with 81% occurance in children and 19% no caries lesion occurance in children. From as many as 300 children, only a small proportion of children had poor dental hygiene 18.7%, while 81.3% had poor dental hygiene. In the type of cariogenic food, the most consumed variable was the variable that often drank milk, 82.3% when compared to children who rarely drank 17.7%, according to the research result mentioned in table (Tilman CB., et al, 2026).

Table 2. Distribution Caries lesion based on tooth apprearence.

Caries Lesion	**N**	**%**
Anterior (Incisive&Canine) tooth	42	14
Posterior (Premolar&Molar) tooth	201	67
Total	**243**	**81**

Table 2. above shows there were caries lesion on anterior tooth (Incisive&Canine) with proportion 14% while 67% caries lesion occur in posterior tooth (Premolar & Molar) from a total of 243 or 81% children with caries lesion, based on research result (2026).

Table 3. Relationship of behavior to maintain dental hygiene with dental caries.

Variables	**Caries (%)**		**Crude OR**	**95% Confidance Interval**		**p-value**
	No	**Yes**		**Lower**	**Upper**	

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Gargle			0.029	0.014	0.062	< 0.001
Yes	43 (75.4)	20 (8.2)				
No	14 (24.6)	223 (91.8)				
Brushing teeth			0.053	0.013	0.222	< 0.001
2x a day	55 (96.5)	144 (59.3)				
1x a day	2 (3.5)	99 (40.7)				
Brush your teeth at night			0.001	0.001	0.006	< 0.001
Yes	54 (94.7)	6 (2.5)				
No	3 (5.3)	237(97.5)				
Routine Dental check up			0.252	0.138	0.460	< 0.001
Yes	34 (59.6)	66 (27.2)				
No	23 (40.4)	177 (72.8)				
Total	**57 (100)**	**243 (100)**				

The table above shows that there is a relationship between gargling behavior and the incidence of dental caries ($p<0.001$). The proportion of children who do not gargle their mouths who have caries is 91.8%, while the proportion of children who do not gargle their mouths who do not experience caries is much smaller at 24.5%. Likewise, there is a difference in the proportion of children who have a habit of gargling and experiencing caries by 8.2%, while the proportion of children who gargle and do not experience caries is 75.4%.

Likewise, there was a relationship between tooth brushing habits and the incidence of caries ($p<0.001$). The proportion of children who brush their teeth twice a day with caries is 59.3%, while the proportion of children who brush their teeth twice a day is 96.5% without caries. The habit of brushing teeth at night before going to bed also showed an association with the incidence of dental caries ($p<0.001$). The proportion of children who do not brush their teeth at night before going to bed with caries is 97.5%, while the proportion of children who do not brush their teeth at night is only 5.3% who do not experience caries. Routine dental check-ups showed a relationship with dental caries by 72.8%, while the proportion of children who did not regularly check their teeth was only a small proportion who did not experience caries, which was 40.4%. In addition to the behavior of maintaining dental hygiene, the status of dental

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hygiene is a preventive or protective factor against the incidence of caries, according the research result (Tilman CB., et al, 2026).

Table 4. Relationship of dental hygiene status with caries.

Variables	Caries (%)		Crude OR	95% Interval	Confidance	p-value
	No	Yes		Lower	Upper	
Dental Hygiene			0.022	0.010	0.049	< 0.001
Good	15 (26.3)	229 (94.2)				
Poor	42 (73.7)	14 (5.8)				
Total	**57 (100)**	**243 (100)**				

The table above shows that there is a relationship between dental hygiene status and dental caries (p<0.001) with the proportion of children with poor dental hygiene experiencing caries of 94.2%, while the proportion of children with poor dental hygiene who did not experience caries was 26.3% lower. Likewise, the proportion of children with good dental hygiene who did not experience caries was higher at 73.7%, according the research result (Tilman CB., et al, 2026).

Table 5. Relationship of Cariogenic foods with caries.

Variables	Caries (%)		Crude OR	95% Interval	Confidance	p-value
	No	Yes		Lower	Upper	
Milk			3.846	2.000	7.98	<0.001
Drink often	36 (63.2)	211(86.8)				
Drink rarely	21(36.8)	32 (13.2)				
Soft Drink			2.252	1.209	4.129	0.015
Drink often	36 (63.2)	193(79.4)				
Drink rarely	21 (36.8)	50 (20.6)				
Cake			1.479	0.823	2.658	0.221
Eat often	32 (56.1)	159 (65.4)				

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Eat rarely	25 (43.9)	84 (34.6)				
Chocolate			4.014	2.204	7.312	<0.001
Eat often	24 (42.1)	181 (74.5)				
Eat rarely	33 (57.9)	62 (25.5)				
Ice Cream			2.607	1.420	4.787	0.002
Eat often	33 (57.9)	190 (78.2)				
Eat rarely	24 (42.1)	53 (21.8)				
Candies/sweets			15.440	7.828	30.454	<0.001
Eat often	20 (35.1)	217 (89.3)				
Eat rarely	37 (64.9)	26 (10.7)				
Fast foods			1.234	0.680	2.240	0.537
Eat often	35 (61.4)	161 (66.3)				
Eat rarely	22 (38.6)	82 (34.6)				
Cheese and Nuts			0.475	0.265	0.852	0.015
Eat often	30 (52.6)	84 (34.6)				
Eat rarely	27 (47.4)	159 (65.4)				
Total	**57 (100)**	**243 (100)**				

The table above shows there is a signifacant relationship between the habit of consuming milk with the incidence of caries (p<0.001). The proportion of children who often drink milk for those who have caries is 86.8%, while the proportion of children who often drink milk for those who do not have caries is 63.2%. There is a relationship between soft drinks and caries (p=0.015). The proportion of children who often drink soft drink for those who have caries is 79.4%, while the proportion of children who often drink soft drinks for those who do not have caries is 63.2%. There is a relationship between cake and caries (p=0.021). The proportion of children who often eat cake for those who have caries is 65.4%, while the proportion of children who often eat chocolate for those who do not have caries is 56.1%. There is a significant relationship between consuming chocolate with the incidence of caries (p<0.001). The proportion of children who often eat chocolate for those who have caries is 74.5%, while the proportion of children who often eat chocolate for those who do not have caries is 42.1%. There is a relationship between consuming ice cream with the incidence of caries (p=0.002). The

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proportion of children who often eat ice cream for those who have caries is 78.2%, while the proportion of children who often eat ice cream for those who do not have caries is 57.9%.

There is a significant relationship between candies and dental caries (p<0.001), with the proportion of children who frequently ate sweets or candy with caries was 89.3% of children. While children who like to eat sweets or candy only a small proportion who do not experience caries 35.1%. There is no relationship between fast foods and dental caries (p=0.537). The proportion of children who often eat fast foods for those who have caries is 66.3%, while the proportion of children who often eat fast foods for those who do not have caries is 61.4%. There is a relationship between cheese and nuts with incidence of caries (p=0.015). The proportion of children who often eat cheese and nuts for those who have caries is 34.6%, while the proportion of children who often eat fast foods for those who do not have caries is 52.6%. Therefore, of all the food variables, only the results of the bivariate analysis of the fast food variable did not have a relationship with the incidence of caries in children in this study by (Tilman CB., et al, 2026).

Table 6. Results of multivariate analysis of cariogenic foods and dental hygiene status with the incidence of caries.

Variables	**Adjusted OR**	**95% CI OR**		**p-value**
		Lower	**Upper**	
Milk	3.017	1.013	8.987	0.047
Soft Drinks	0.959	0.322	2.854	0.940
Cake	1.356	0.745	2.467	0.319
Chocolate	2.722	0.838	8.836	0.096
Ice Cream	0.814	0.253	2.618	0.729
Candies	4.315	1.462	12.738	0.008
Cheese and Nuts	0.357	0.132	0.963	0.042
Dental hygiene status	0.025	0.009	0.070	<0.001

Multivariate analysis is an analysis technique that expands or develops from bivariate analysis, the aim is to see the relationship between several variables related to the incidence of caries in elementary school children in the Administrative Post of Dom Aleixo Comoro. The variables included in the multivariate analysis, which were have a significant relationship with the incidence of caries in the bivariate analysis with p value of <0.025. In multivariate analysis, the type of test used is logical regression by including the odd ratio (OR) value, 95%

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Confidance Interval OR and p-value. Results above shows milk has a p value = 0.047 and an OR value = 3.017, so the chance of caries occurrence is 3 times in children who often drink milk when compared to children who rarely drink milk. Another cariogenic variable is candy, where candy has p value = 0.008 and OR = 4.315, so that the probability of caries occurrence is 4 times in children who often eat sweets when compared to children who rarely eat candy or sweets. In other types of cariogenic food, cheese and nuts have p value = 0.042 and OR = 0.357, it means that children who like to eat cheese and nuts are also at risk of developing dental caries. dental hygiene status had p value <0.001 and an OR value = 0.025 so it was significant as a prevention factor of caries (Tilman CB., et al, 2026).

V. DISCUSSION

There are several types of cariogenic foods which, if consumed continuously, can cause tooth decay. Cariogenic foods are soft foods, easily attached to the teeth so that they quickly damage the teeth. In this study common cariogenic foods are often drink or eat are milk 82.3% and candy or sweets 79%. The results of bivariate analysis show that the type of food that has the most influence on the incidence of caries is milk and candy, because both have a p value <0.05 and an OR value > 1. Milk has an OR value of 3,017 with a 95% CI, the OR is between 1,013 - 8,987, so that This means that children who drink milk frequently have 3 times the chance to experience caries when compared to elementary school children who rarely drink milk. Candy has an OR value of 4,315 with 95% CI OR between 1,462 - 12,738, so that elementary school children who often eat sweets have a 4 times chance of caries when compared to elementary school children who rarely eat sweets. This is related to the habits of elementary school children in consuming sweet, sticky and artificial sweeteners and foods that can increase the chances of the prevalence of dental caries[13]. The results of the multivariate analysis showed that the OR value < 1 so that it was not statistically significant even though the value was $p < 0.001$ or $p < 0.05$. In connection with this, dental hygiene is related to the incidence of caries in elementary school children in the Administrative Post of Dom Aleixo Dili Timor-Leste. So that dental hygiene is also a risk factor for the incidence of caries more less in future cited by (Tilman CB., et al, 2026).

VI. CONCLUSION

There is a relationship between cariogenic foods (milk dan candy or sweets) have significant relation with incidence of caries in elementary school children in Administrative Post of Dom Aleixo Dili. In addition, the dental hygine also play an important role related to the incidence of caries in elementary school children. We suggest improving the food environment in public institutions, particularly schools, through regulating sales of foods and beverages high in free sugars cited by (Tilman CB., et al, 2026).

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VII. REFERENCES:

1. Global Burden of Disease Collaborative Network. *Global Burden of Disease Study 2019 (GBD 2019)*. Seattle: Institute of Health Metrics and Evaluation (IHME); 2020. Available fromhttp://ghdx.healthdata.org/gbd-results-tool.
2. Elizabeth Shick. (2018). *Global Oral Health*. Global Health and Disaster Course. WHO 2018.
3. Ramadhan A. (2019). *Serba-serbi Kesehatan Gigi*. Penerbit Bukune.Jakarta.
4. Dye BA. (2017). *Early Childhood Caries*. American Academy of Pediatric Dentistry:284:1.
5. Budisuari MA, Muhamad AM et al.(2019). *The Relationship Between Eating Patterns and Brushing Habits with Dental and Oral Health (Caries) in Indonesia*. Health systems research bulletin. Vol. 15 no 3.
6. Oliveira et al. (2018). *Exploring the Association of Dental Caries with Social Factors and Nutritional Status in Brazilian preschool Children*. Europe J.Oral Sci 2018;116:37-43.
7. Seow WK. (2018). *Biological Mechanisms of Early Childhood Caries*. J.Community Dentistry and Oral Epidemiology,p 10-32.
8 Ministry of Finance., General Directorate of Statistics. (2022). *East Timor Statistics 2022*. Access on: https://www.statistics.gov.tl/pt/category/publications/census-publications/2022-census-publications/.
9. Government of Republic Democratic Timor Leste (2011). *Timor Leste Health's Strategic Development Plan 2011-2030.* Published Pdf formated Dili. Timor Leste.
10. Tarigan R. (2014). *Oral and Dental Health: Caries Risk assestment*. 6th Edition, UGC Medicine Book Publisher. Jakarta.
11. Al-Malik IM, et al. (2016). *Prevalence of Dental Caries, Severity and Pattern in Age 6-7 years old Children in a selected Community in Saudi Arabia*. http://www.thejcdp.com/issue016/al-malik/index.htm
12. Nicolau B., Marcenes W. (2015).*Explaining Association between Height and Dental Caries in Brazillian Adolescents*. London, Community Dent. And Oral Epidemiology 2005:33;93-98.
13. Hamada Taizo, et al. (2018).*Epidemiology of Dental Disease*. Hosted on the University of Illionis Chicago.
14. Winarno. (2014). *Food Chemistry and Nutrition*. Gramedia Jakarta.

Power System Technology
ISSN:1000-3673
Received: 16-11-2025 Revised: 05-12-2025 Accepted: 28-01-2026

15. Tilman CB., et al. (2020). *The Perception of Population and Health Professionals regarding the National immunization Program of Timor-Leste*. Health Systems and Policy Research, ISSN 2254-9137 Vol.7 No.1:2 2020. http://www.imedpub.com published date may 11, 2020.

16. Tilman CB., et al. (2025). The Literature Depth Review o the Study Design in Qualitative Research Methodology. Research Article. In site https://www.ajmcrr.com