

Jurnal Kesehatan Gigi

The Relationship Between Infant Formula and the Incidence of Dental Caries Among Stunted Children in Muaro Jambi Regency, 2024

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ABSTRACT

Stunting is the most prevalent form of malnutrition, with far-reaching impacts beyond just height and academic performance, as it is also associated with poor oral health conditions. A study has shown that stunted children have a high prevalence of dental caries, with a def-t index value of 53.3%. Muaro Jambi Regency has a stunting prevalence rate higher than the provincial average of Jambi, standing at 18.6%. This study aims to identify the relationship between formula feeding and the incidence of dental caries in Muaro Jambi Regency in 2024. This study employs a cross-sectional design. The sample consists of stunted children aged 1-5 years. Data analysis includes univariate, bivariate, and multivariate analyses. The results of this study show that formula feeding has a significant association with the incidence of dental caries in stunted children, with a p-value of 0.007 after controlling for the variables of cariogenic food consumption and tooth brushing habits. Furthermore, the results indicate that stunted children who are fed formula are 14.545 times more likely to develop dental caries compared to those who are not fed formula.

Keyword : dental caries; infant formula; stunting

Introduction

Malnutrition in early childhood, such as stunting, wasting, vitamin A deficiency, and zinc deficiency, is a global problem that has a large impact, including on the continuity of individual and community quality of life [1]. Based on the categorization of malnutrition, wasting and stunting are major health issues that are the main cause of mortality and morbidity in children [2].

In 2020, 149.2 million children under five years old were affected by stunting, 45.4 million by wasting, and 38.9 million by obesity, with prevalences respectively 22%, 6.7%, and 5.7% [3]. Therefore, globally, stunting is the most prevalent form of malnutrition. In Indonesia, the prevalence of stunting in 2022 was 21.6%, a decrease from 24.4% in 2021. Although the prevalence has decreased, stunting remains a major issue in children's health that needs urgent attention, as its

impact not only affects children's height, but also their academic performance [4].

Stunting, a result of long-term malnutrition, leads to delays in mental development, impaired school performance, and a decrease in intellectual capacity. This condition can impact the economic productivity at the national level [5]. The government has set a target to reduce the prevalence of stunting to 14% in 2024 [4].

Stunting has widespread impacts [2]. In addition to affecting height and academic performance [4], stunting is also associated with poor oral health. A study indicated that children with stunting have a high prevalence of dental caries, that is 53.3%, with a high score of def-t (*decayed, exfoliated, filled teeth*). In this study, the sample size consisted of 45 stunted children. Among the respondents, 24 children (53.3%) exhibited a very high level of dental caries according to the def-t assessment indicators [6].

A systematic review study indicated that the occurrence of dental caries in early childhood is influenced by five factors: sociodemographics, diet, oral hygiene, the healthcare system, and other factors [7]. Other research has shown a relationship between several factors and the occurrence of dental caries in stunted children, including parental education, parental occupation, child age, gender, DMF-T, and income [8], Saliva pH, dietary habits involving cariogenic foods, beverage types, infant formula, tooth brushing habits, and the Debris Index [9].

Other studies have also shown that the distance from home to healthcare facilities can influence the rate of dental caries in children, including those with stunting [10], [11], [12], [13]. In addition to distance, there is research on the pattern of infant formula consumption and its association with dental caries in stunted children. This study indicates that stunted children who receive milk for a longer period are at a higher risk of developing dental caries [14], [15].

Although various studies have identified factors associated with dental caries in stunted children, research specifically analyzing the relationship between infant formula consumption and dental caries in stunted children, while considering confounding variables, remains very limited. Therefore, this study aims to fill this gap by comprehensively analyzing the correlation between infant formula consumption and dental caries occurrence in stunted children in Muaro Jambi Regency, after controlling for confounding factors.

The determination of stunting in this study was based on results established through the e-Pencatatan dan Pelaporan Gizi Berbasis Masyarakat (e-PPGBM) application. This application is a digital recording system that includes data providing a quick overview of the nutritional status of toddlers, enabling early detection of their nutritional status, and allowing for earlier interventions [16].

Muaro Jambi Regency has a stunting prevalence higher than that of Jambi Province, at 18.6%. According to an interview with the Head of the Nutrition Section at the Muaro Jambi Health Department, there are currently 471 stunted toddlers in Muaro Jambi. This study will analyze the relationship between infant formula consumption and the occurrence of dental caries in stunted children in Muaro Jambi Regency in 2024, after controlling for confounding variables.

Methods

Based on the review of factors related to dental caries in stunted children, this study designates the primary independent variable as infant formula consumption in children, with confounding variables including child gender, parental income, parental occupation, parental education, distance to healthcare services, cariogenic foods, fruit consumption habits, and tooth brushing habits. The dependent variable in this study is dental caries.

This study has been ethically approved with the issuance of the ethical clearance letter from Poltekkes Kemenkes Jambi, number LB.02.06/2/1147/2024. This is a quantitative, analytical observational study with a cross-sectional design. Data will be obtained in this study by measuring both independent and dependent variables simultaneously. The following is the conceptual framework of the study.

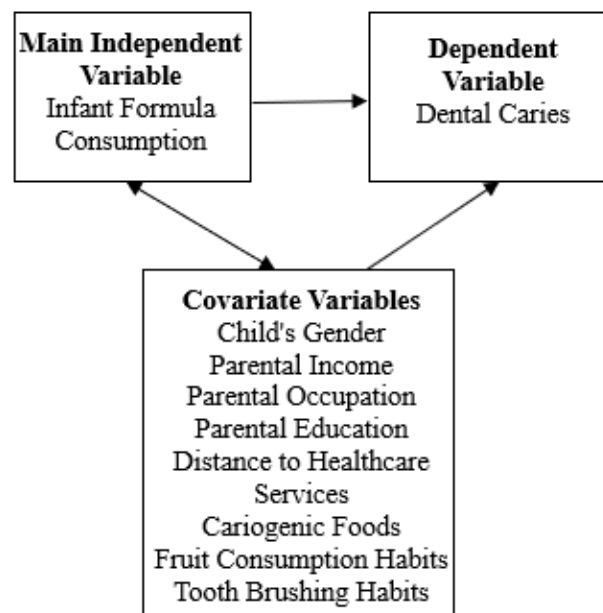


Figure 1. Research Conceptual Framework

This study was conducted in Muaro Jambi Regency. Data collection took place in July 2024. The population of this study consists of all children with stunting in Muaro Jambi Regency in 2024, totaling 471 individuals. The sample for this study consists of stunted children from selected areas, namely Penyengat Olak Village and Pondok Meja Village, with a sample size of 50 individuals based on the minimum sample size calculation formula.

The study sample must meet the inclusion and exclusion criteria. The inclusion criteria for

this study are all stunted children recorded by the nutrition unit in Muaro Jambi Regency in 2024, aged 1-5 years. The exclusion criteria include cases where the child's guardian refuses to participate in the study, the child is physically or mentally unwell, the parents are uncooperative during the interview, and the child has already developed adult teeth

The instruments used in this study are a questionnaire and a def-t examination sheet. Data on risk factors were obtained from questionnaires filled out by the parents of the respondents, while dental caries data were obtained through examinations conducted by dental therapists. The questionnaire consists of 24 items, including 14 questions on basic data and 10 questions on oral health data. Data collection was carried out at the Pondok Meja Health Center and the Penyengat Olak Health Center.

Data will be analyzed using univariate analysis to examine the distribution of the studied variables. After conducting univariate analysis,

bivariate analysis will be performed to test the relationship between the independent and dependent variables. Based on the results of the bivariate analysis, candidate variables will be selected for inclusion in the multivariate analysis. If the test results show a p-value < 0.25 and the variable has substantive significance, it will be included in the multivariate analysis. Multivariate analysis will be conducted to determine the relationship between infant formula consumption and dental caries occurrence in stunted children, after controlling for confounding variables (covariates).

Results and Discussion

The results of the univariate analysis will examine the distribution and frequency of both the dependent and independent variables. Table 1 shows the distribution and frequency of the dependent variable, dental caries, and the main independent variable, infant formula consumption.

Table 1. Univariate Analysis of Dependent and Main Independent Variables

Variable	Frequency	
	n	%
Dental Caries Status		
Caries	34	68 %
No Caries	16	32 %
Infant Formula		
Yes	32	64 %
No	18	36 %

From the results of the univariate analysis, 34 children (68%) experienced dental caries, while 16 children (32%) did not. Based on these results, the prevalence of dental caries in stunted children in Muaro Jambi Regency in 2024 is 68%. Among all the study respondents, 32 children (64%) consumed infant formula, while 18 children (36%) did not consume infant formula.

After the univariate analysis of the dependent variable and main independent variable, univariate analysis will next be performed on the covariate variables related to the sociodemographics of the study respondents. The results of the univariate analysis on sociodemographic factors are presented in Table 2, where the variables may influence the outcomes.

Table 2. Respondent Characteristics Based on Sociodemographics

Variable	Frequency	
	n	%
Gender		
Male	23	46 %
Female	27	54 %
Family Income (Thousand)		
<1,500	7	14 %
1,500-2,500	14	28 %
2,500-3,500	21	42 %
>3,500	8	16 %
Father's Occupation		
Laborer	26	52 %
Entrepreneur	14	28 %
Farmer	10	20 %
Father's Education		
Higher Education	2	4 %
High School	20	40 %
Junior High School	14	28 %
Elementary School	14	28 %
Mother's Education		
Higher Education	6	12 %
High School	17	34 %
Junior High School	10	20 %
Elementary School	17	34 %

In Table 2, the characteristics of the respondents based on sociodemographic factors can be seen. The distribution of gender among the respondents shows that 54% are female, and 46% are male. Based on this data, the difference in the number of respondents between males and females is not very significant. The family income of the respondents is predominantly in the 2,500,000-3,500,000 IDR group, with 42%, and the lowest income group is <1,500,000 IDR, accounting for 14%. The parents' occupation, specifically the father's occupation, shows that most of the respondents' fathers work as laborers, making up 52%, followed by entrepreneurs at 28%, and farmers at 20%.

The father's education level among the respondents is distributed as follows, from the highest: 40% have a high school education, 28% have a junior high school education, 28% have an elementary school education, and 4% have a higher education degree. The highest percentage for the mother's education is at the high school and elementary school levels, each with 34%, followed by junior high school at 20%, and higher education at 12%. These educational factors are important to consider as they may influence the oral health and nutrition of the children. The univariate analysis of the variable that can substantively influence dental caries in stunted children is presented in Table 3.

Table 3. Respondent Characteristics Based on Substantial Risk Factors

Variable	Frequency	
	n	%
Cariogenic Foods		
Yes	27	54 %
No	23	46 %
Vegetable Consumption		
Yes	22	44%
No	28	56%
Tooth Brushing		
Correct	23	46%
Incorrect	27	54%

In Table 3, it can be seen that 27 children (54%) have the habit of consuming cariogenic foods. Cariogenic food consumption was measured by how many times the respondent consumed cariogenic foods in the past week. Respondents who ate cariogenic foods more than three times a week were considered to have the habit of consuming cariogenic foods, while those who consumed cariogenic foods three times or fewer were considered not to have the habit of consuming cariogenic foods. A total of 22 children (44%) have the habit of eating vegetables.

Respondents are considered to have the correct tooth brushing criteria if they brush their teeth twice a day. Respondents who brush their teeth

less than twice a day are considered to have incorrect tooth brushing habits. A total of 27 children (54%) fall into the category of incorrect tooth brushing.

Bivariate analysis is used to test the relationship between the independent and dependent variables. Based on the results of the bivariate analysis, candidate variables will be selected for inclusion in the multivariate analysis. If the test results show a p-value < 0.25 and the variable has substantive significance, it will be included in the multivariate analysis. The selection of variables for the multivariate analysis ensures that only those factors with a meaningful impact are considered.

Table 4. Crosstabulation of the Main Independent Variable: Infant Formula Consumption

Variable	No Dental Caries		Dental Caries	
	n	%	n	%
Infant Formula				
No	10	20 %	8	16%
Yes	6	12 %	26	52%

Table 4 shows the crosstabulation of the main independent variable, infant formula consumption, with the occurrence of dental caries. It can be seen that 52% of children who consumed infant formula experienced dental caries, whereas only 16% of

those who did not consume infant formula had dental caries. These results suggest a higher prevalence of dental caries among children who consume infant formula compared to those who do not.

Table 5. Crosstabulation of Sociodemographic-Related Variables

Variable	No Dental Caries		Dental Caries	
	n	%	n	%
Gender				
Male	10	20 %	13	26%
Female	6	12 %	21	42%
Family Income (Thousand)				
<1,500	1	2%	6	12%
1,500-2,500	6	12 %	8	16%
2,500-3,500	6	12 %	15	30%
>3,500	3	6 %	5	10%
Father's Occupation				
Laborer	9	18 %	17	34%
Entrepreneur	4	8 %	10	20%
Farmer	3	6 %	7	14%
Father's Education				
Higher Education	1	2%	1	2%
High School	8	16%	12	24%
Junior High School	4	8%	10	20%
Elementary School	3	6%	11	22%
Mother's Education				
Higher Education	2	4 %	4	8 %
High School	7	14 %	10	20%
Junior High School	4	8 %	6	12%
Elementary School	3	6 %	14	28%

Table 5 presents the crosstabulation of sociodemographic-related variables with the occurrence of dental caries. For gender, 26% of male children and 42% of female children have dental caries. Regarding family income, children from families earning between 1,500-2,500 thousand have the highest prevalence of dental caries, with 16% not affected and 30% affected. The occupation of the father also shows variation in the occurrence of dental caries, with the highest incidence among children whose fathers are laborers (34% with dental caries). In terms of fathers' education, children whose fathers have a high school education show the highest percentage

of dental caries (24%), while the least affected are those whose fathers have higher education (2%). Similarly, for mothers' education, children of mothers with elementary school education had the highest prevalence of dental caries (28%), and the lowest was among those whose mothers had higher education (8%). These results indicate that sociodemographic factors, including gender, family income, and education levels of both parents, have a notable influence on the occurrence of dental caries in stunted children. Next, a crosstabulation analysis will be performed on the variables related to substantial risk factors, which are presented in Table 6.

Table 6.
Crosstabulation of Variables Related to Substantial Risk Factors

Variable	No Dental Caries		Dental Caries	
	n	%	n	n
Cariogenic Foods				
Yes	13	26 %	14	28%
No	3	6%	20	40%
Vegetable Consumption				
Yes	8	16%	14	28%
No	8	16%	20	4%
Tooth Brushing				
Correct	11	22%	12	24%
Incorrect	5	10%	22	44%

Table 6 presents the crosstabulation of variables related to substantial risk factors and their association with dental caries. The table shows that children who consume cariogenic foods have a higher prevalence of dental caries, with 28% of those consuming cariogenic foods affected, compared to 40% of those who do not consume cariogenic foods. Regarding vegetable consumption, there is a similar trend, with 28% of

children who do not consume vegetables experiencing dental caries, compared to only 16% of those who do consume vegetables. Additionally, the tooth brushing habits show that 44% of children who brush their teeth incorrectly have dental caries, while 24% of those who brush their teeth correctly experience dental caries. Bivariate analysis will be performed on the main independent variable, with the results presented in Table 7.

Table 7.
Bivariate Analysis of the Main Variable

Variable	P -Value	POR	CI
Infant Formula			
No	0,008	5,42	1,5-19,59
Yes			

Table 7 presents the results of the bivariate analysis of the main independent variable, which in this case is infant formula consumption, and its relationship with the occurrence of dental caries in stunted children. The table shows a statistically significant relationship between infant formula consumption and dental caries, with a p-value of

0.008, which is less than the significance threshold of 0.05. This indicates that the consumption of infant formula has a strong association with an increased likelihood of developing dental caries.

The table also shows the Prevalence Odds Ratio (POR) for children who consume infant formula, which is 5.42, indicating that these

children are 5.42 times more likely to experience dental caries compared to those who do not consume infant formula. The Confidence Interval (CI) for the odds ratio is reported as 1.5-19.59, meaning the true odds ratio could range from 1.5 to 19.59, further supporting the strength of the association.

However, it is important to note that these results are still influenced by confounding variables that have not yet been controlled for in this analysis. The presence of these uncontrolled variables may

introduce bias, making it difficult to draw definitive conclusions about the direct relationship between infant formula consumption and dental caries. Further adjustments and comprehensive analysis will be conducted in the multivariate analysis.

In addition to the main independent variable, further analysis was conducted on the covariate variables. The results are presented in Table 8.

Table 8.
Bivariate Analysis of Sociodemographic Variables

Variabel	P-Value	POR	CI
Gender			
Male	0,108		
Female		2,7	0,79-9,17
Family Income (Thousand)			
<1,500	0,550		
1,500-2,500		0,222	0,02-2,37
2,500-3,500		0,417	0,04-4,24
>3,500		0,278	0,02-3,58
Father's Occupation			
Laborer	0,916		
Entrepreneur		1,324	0,32-5,43
Farmer		1,235	0,26-5,98
Father's Education			
Higher Education	0,638		
High School		1,5	0,08-27,6
Junior High School		2,5	0,12-50,4
Elementary School		3,67	0,17-77,5
Mother's Education			
Higher Education	0,439		
High School		0,71	0,1-5,04
Junior High School		0,75	0,09-6,23
Elementary School		2,33	0,28-19,2

For the gender variable, the p-value is 0.108 (<0.25), so gender is included as a candidate for the multivariate model. With a Prevalence Odds Ratio (POR) of 2.7 (CI: 0.79-9.17), female gender has a 2.7 times higher risk of developing dental caries compared to male gender. However, this result is not statistically significant at the 0.05 significance level. The family income variable has a p-value of 0.550 (>0.25), indicating no significant relationship between family income and the occurrence of dental caries. Therefore, this variable is not included as a candidate for the model. The father's occupation variable has a p-value of 0.916, suggesting no

significant relationship between the father's occupation and the occurrence of dental caries, and this variable is also not included in the model. For the father's and mother's education variables, the p-values are 0.638 and 0.439, respectively, meaning both variables are not included as candidates for the model. Next, bivariate analysis is performed on the substantial variables as risk factors for dental caries in stunted children

Bivariate analysis was conducted on risk factors that have substantial relevance in causing dental caries in stunted children. The results of the analysis for these variables are presented in Table 9.

Table 9. Bivariate Analysis of Sociodemographic Variables

	Variabel	P-Value	POR	CI
Cariogenic Foods	Tidak	0,006	6,2	1,5-25,85
	Ya			
Vegetable Consumption	Ya	0,558	1,43	0,43-0,47
	Tidak			
Tooth Brushing	Benar	0,026	4,03	1,13-14,4
	Salah			

The cariogenic food variable has a p-value of 0.006, indicating a significant relationship between cariogenic food consumption and the occurrence of dental caries in stunted children, with a Prevalence Odds Ratio (POR) of 6.2 (CI: 1.5-25.85). The POR results show that children who have the habit of consuming cariogenic foods are 6.2 times more likely to experience dental caries compared to children who do not have the habit of consuming cariogenic foods. The habit of consuming vegetables is not included as a candidate for the multivariate model because the p-value is 0.558

(>0.25). In terms of tooth brushing habits, children who do not brush their teeth correctly have a 4.03 times higher risk of developing dental caries compared to those who brush their teeth correctly.

Multivariate Analysis

The results of the bivariate analysis show that four variables will be included as candidates for the multivariate model: the main independent variable, infant formula consumption, and the covariate variables: gender, the habit of consuming cariogenic foods, and the frequency of tooth brushing.

Table 10. Initial Multivariate Analysis Model

	Variable	P Value	POR	CI
Infant Formula		0,009	13,985	1 - 100
Gender		0,21	2,684	1-13
Cariogenic Foods		0,038	6,886	1-42
Tooth Brushing		0,025	9,551	1-69

In the multivariate analysis, variables are removed from the full model using the Hierarchical Backward Elimination method, starting with the removal of variables that have a p-value > 0.05 or those with higher p-values. The removal of variables considers changes in the Prevalence Odds Ratio (POR) for the main independent variable related to the occurrence of dental caries. If the

change in POR is less than 10%, the variable can be removed from the model. However, if the change in POR is greater than 10%, the variable is retained in the model. The removal of variables begins with the exclusion of the gender variable. This process ensures that only the most significant variables remain in the model, improving the accuracy and reliability of the analysis.

Table 11. Multivariate Analysis Model After Excluding the Gender Variable

	Variable	P Value	POR	CI
Infant Formula		0,007	14,545	2 - 101
Cariogenic Foods		0,029	7,735	1-48
Tooth Brushing		0,022	9,531	1-65

The change in the POR for the infant formula consumption variable before and after excluding the gender variable showed a 4% change (<10%), so the

gender variable was removed from the model. Next, the variable for the habit of consuming cariogenic foods will be excluded.

Table 12. Multivariate Analysis Model After Excluding the Cariogenic Food Variable

Variable	P Value	POR	CI
Infant Formula	0,005	10,754	2 – 57
Tooth Brushing	0,013	8,427	1,6-45

The change in the Prevalence Odds Ratio (POR) for the infant formula consumption variable before and after excluding the habit of consuming cariogenic foods showed a 23% change (>10%), indicating that the exclusion of this variable had a significant impact on the model. As a result, the

cariogenic food consumption variable was reintroduced into the model to maintain the accuracy and reliability of the analysis. Next, the variable for tooth brushing habits will be excluded in the following step of the model adjustment process.

Table 13. Multivariate Analysis Model After Excluding the Tooth Brushing Habit Variable

Variable	P Value	POR	CI
Infant Formula	0,014	5,906	1 – 24
Cariogenic Foods	0,016	6,736	1 - 32

The change in the Prevalence Odds Ratio (POR) for the infant formula consumption variable before and after excluding the tooth brushing habit variable showed a 58% change (>10%), indicating

that excluding this variable significantly affected the model. As a result, the tooth brushing habit variable was reintroduced into the model. The final multivariate model is presented in Table 14.

Table 14. Final Multivariate Analysis Model

Variable	P Value	POR	CI
Infant Formula	0,007	14,545	2 - 101
Cariogenic Foods	0,029	7,735	1-48
Tooth Brushing	0,022	9,531	1-65

From the final model, it is known that the habit of consuming cariogenic foods and the habit of tooth brushing act as confounder variables. Infant Formula consumption is significantly associated with the occurrence of dental caries, with a p-value of 0.007 (<0.05) after controlling for the cariogenic food and tooth brushing variables. A stunted child who is given infant formula has a 14.545 times higher risk of developing dental caries compared to one who is not given infant formula.

Stunting is a condition that occurs when a toddler's height or length is lower than expected compared to the growth standards established by the World Health Organization (WHO) based on age and gender. This condition serves as an important indicator of chronic nutritional problems in children, reflecting a long-term deficiency in nutrient intake. Children who experience stunting not only face the risk of impaired physical growth but may also suffer from negative effects on cognitive development and long-term health. This indicates that they have experienced prolonged malnutrition during critical periods of their growth.

A study shows that there is a significant relationship between infant formula consumption

and the occurrence of malnutrition in toddlers. Children who receive infant formula as a substitute or supplement to breast milk tend to have a higher risk of malnutrition compared to children who receive exclusive breastfeeding [17], [18], [19].

This study is in line with another study conducted by Marlindayati et al., which was carried out on 41 stunted child respondents. The results of the study showed that the respondents had an average def-t score of 5.92, which is considered high. The high incidence of dental caries in these children is related to the feeding patterns, which involve the use of sweetened condensed milk as a daily drink, the frequency of infant formula consumption being too frequent, excessive amounts of milk, and the use of pacifiers. The statistical test results showed a p-value < 0.005, indicating a significant effect of the milk feeding pattern on the occurrence of dental caries in stunted children in the Rambang subdistrict, Muara Enim, South Sumatra [14].

A systematic review study indicates a relationship between stunting and the occurrence of dental caries in children, caused by prolonged breastfeeding practices, poor complementary

feeding practices, high sugar consumption, and poor oral hygiene practices. The mother's parenting style in terms of meeting nutritional needs and maintaining oral health influences the occurrence of stunting and dental caries in children [17].

Another study that aligns with the results of this research also shows that the sequence of sectors in the occurrence of dental caries in stunted individuals, in order, is sextant II, sextant VI, sextant IV, sextant III, sextant I, and finally, sextant V. The results of the study show a significant relationship between the type of milk and the def-t index ($r = 0.520$, $\text{Sig} = 0.003$) [9].

Infant formula consists of two types: cow's milk-based formula and non-cow's milk-based formula. Cow's milk is more commonly used in infant formula. To make cow's milk safer and more palatable, several modifications are made, such as removing animal fats and replacing them with vegetable oils, reducing the protein content to minimize effects on the infant's relatively underdeveloped kidney tubular system, and adding or balancing minerals and vitamins. In addition, some infant formulas contain sucrose, which has cariogenic properties. Sucrose can be fermented by bacteria in the oral cavity. This process results in a decrease in pH in the mouth, leading to the occurrence of dental caries. Sucrose also acts as a substrate for the formation of extracellular polysaccharides in dental plaque. This biofilm has a greater cariogenic potential [20].

This study has several advantages that are expected to contribute to the field of dental and oral health in stunted children. The study uses several independent variables that are suspected to be confounders, ensuring that the results are pure and free from confounding influences. The research approach, which specifically targets the population of stunted children, could serve as a foundation for developing more comprehensive interventions to reduce the prevalence of dental caries in stunted children. This study was analyzed up to the multivariate level to ensure that the research findings are not influenced by other variables aside from the main independent variable.

A limitation of this study is the small sample size for logistic regression testing, which resulted in a very wide Confidence Interval. This can lead to inconsistencies in the Prevalence Odds Ratio (POR) for the main independent variable, which may vary when applied to the population. This limitation can serve as a basis for conducting further research using a larger sample size

Conclusion

The results of the study show that infant formula is significantly associated with dental caries in stunted children, with a p-value of 0.007 after controlling for cariogenic food and tooth brushing habits. Furthermore, the results indicate that stunted children who are given infant formula have a 14.545 times higher risk of developing dental caries compared to those who are not given infant formula.

Acknowledgements

Thanks to Poltekkes Kemenkes Jambi for funding this research

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