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Rampant Caries in Stunted Children Aged 2-5 Years

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ABSTRACT

The prevalence of stunting among children under five in the working area of Puskesmas (Community Health Centers) Karang Intan 2, based on data from the Banjar District Health Office in October 2022, was recorded at 506 cases. Dental and oral health issues, particularly dental caries, are among the most common health problems globally, affecting nearly half of the world's population or approximately 3.58 billion people. According to the 2018 Basic Health Research, dental caries, including decayed or damaged teeth, accounted for 45.3% of dental problems in Indonesia. This study aims to investigate rampant caries among stunted children aged 2–5 years in Pulau Nyiur Village, Karang Intan Subdistrict, Banjar District, South Kalimantan. The study employed a descriptive research design with a total sampling technique, involving 50 children aged 2–5 years attending the Posyandu within the working area of Puskesmas Karang Intan 2. The results revealed that male children outnumbered females in the sample. Among the participants, 36 children (72%) were stunted, while 14 children (28%) were not. The most common type of rampant caries was Type 3, affecting 15 children (31%), followed by Type 4 with 14 children (27%), Type 1 with 13 children (26%), and Type 2 as the least common, affecting 8 children (16%). It can be concluded that stunted children aged 2–5 years in Pulau Nyiur Village have a significant prevalence of rampant caries, with Type 3 being the most frequently observed. Additionally, the majority of stunted children in this study were male. These findings highlight the need for integrated interventions addressing both nutritional and dental health to reduce the prevalence of stunting and caries among young children.

INTRODUCTION

The 2018 Basic Health Research (Riskesdas) report highlighted that the most prevalent dental problem in Indonesia is damaged, decayed, or cavity-ridden teeth, affecting approximately 45.3% of the population (Kemenkes RI, 2018). Dental caries is tooth decay

caused by multiple factors, including the interaction between the teeth, host saliva, oral bacteria, and fermentable food (Hilmiah et al., 2021).

Stunting is one of the most common forms of malnutrition. Stunting affects a child's development, including oral cavity growth, often resulting in a higher prevalence of dental caries due to changes in saliva composition (Luthfi et al., 2021). Sopianti et al., (2023) also stated that stunted children are more likely to develop dental caries.

According to Aviva, et. al., (2020), the growth and development of teeth in stunted children tend to be abnormal, making them more vulnerable to caries. Preschool-age children are at particularly high risk for dental caries (Latief et al., 2019). Studies have shown that among all preschool students at Oriza Sativa Kindergarten, 30 children (65%) were categorized as stunted. The severity of dental caries in these students was high, particularly in the age group of 3–4 years, with an average def-t score of 5.4, and extremely high in the age group of 4–5 years, with an average def-t score of 6.6 (Jumriani, 2020).

Stunting is most commonly observed in children aged 2–3 years, with 23 children (39%) falling into this age range. By gender, stunting is more prevalent among boys, affecting 35 children (59.3%). Regarding dental caries status, high caries levels were observed in 19 children (32.2%) aged 2–5 years. Research has revealed a positive correlation of 0.381 (38.1%) between stunting and dental caries in children aged 2–5 years, indicating that stunted children have a significantly higher likelihood of developing dental caries (Damawati, 2023).

This study aims to examine the prevalence of rampant caries among stunted children in Pulau Nyiur Village, Karang Intan Subdistrict, Banjar District, South Kalimantan. The research focuses on children aged 2–5 years, a group particularly vulnerable to oral and dental health problems.

METHOD

The research is a descriptive survey aimed at describing or illustrating a phenomenon occurring within the community. The instruments used in this study include questionnaires and forms for recording rampant caries examination results. The equipment utilized consists of mouth mirrors, tweezers, probes, and excavators, while the materials required include personal protective equipment, alcohol, cotton, and handwashing liquid.

The data collection process involves several stages: interviews, completing identity forms, filling out questionnaires, conducting dental and oral examinations, recording data, and performing data analysis. After data collection, the information is compiled and presented in the form of frequency distributions.

The population of this study comprises all stunted children (50 children) attending the posyandu (Integrated Service Post) within the service area of Karang Intan 2 Community Health Center, with the sample collected using the Total Sampling method. This research has received ethical approval from the Ethics Committee of Poltekkes Banjarmasin under No. 672/KEPK-PKB/2024.

RESULTS AND DISCUSSION

Table 1. Frequency Distribution Based on Gender.

Gender	N	Percentage (%)
Male	26	52%
Female	24	48%
Total	50	100%

Table 1 shows the distribution of respondents by gender. Out of a total of 50 respondents, 26 individuals (52%) were male, while 24 individuals (48%) were female. Thus, the percentage of males is slightly higher than that of females in this study.

Table 2. Frequency Distribution Based on Stunting and Non-Stunting Incidence in Children Aged 2–5 Years

Incidence of stunting	N	Percentage (%)
Stunting	36	72%
Not Stunting	14	28%
Total	50	100%

Table 2 illustrates the incidence of stunting among respondents. Out of a total of 50 respondents, 36 individuals (72%) experienced stunting, while 14 individuals (28%) did not. This indicates that the majority of respondents, more than two-thirds, fall into the stunting category.

Table 3. Distribution of Rampant Caries in Children 2-5 Years Old

Rampant Caries	N	Percentage (%)
Type 1	13	26%
Type 2	8	16%
Type 3	15	31%
Type 4	14	27%
Total	50	100%

Table 3 shows the distribution of rampant caries based on type among 50 respondents. Type 3 was the most commonly found, with 15 individuals (31%). This was followed by Type 4 with 14 individuals (27%), Type 1 with 13 individuals (26%), and Type 2 as the least common with 8 individuals (16%). These data illustrate the variation in the prevalence of rampant caries across the different types.

DISCUSSION

Invasive dental caries is one of the most common types of enamel damage in children under the age of 5. It highlights the prevalence of dental caries in children aged 2-5 years in Karang Intan District. This condition arises due to a prolonged imbalance in oral calcification caused by increased carbohydrate consumption, particularly frequent intake of cariogenic foods and drinks high in sucrose. Dental decay spreads rapidly and occurs suddenly. Combatting extensive dental caries must be approached systematically and comprehensively, adhering to principles of prevention and treatment (Joisie et al., 2023).

Research by Arini et al., (2024) revealed that the most frequent type of rampant caries in preschool children is Type III. Type I rampant caries was observed in seven children (58.3%) with a habit of drinking milk once a day, whereas Type IV rampant caries was found in eight children (50%) who drank milk three times a day. Based on the Spearman test results, a p-value > 0.005 ($p = 0.819$) was obtained. The study concluded that rampant caries most frequently occurred in children who drank bottled milk twice a day, and no healthy teeth were found in children with the habit of drinking milk three times a day.

Research by Aviva, et al., (2020) revealed that stunted children tend to have higher caries experience in primary teeth compared to non-stunted children, with moderate to severe caries reaching 80%. Children with severe primary tooth caries are at greater risk of experiencing stunting in the future. The study concluded that stunted children in Indonesia more often experience severe primary tooth caries. Furthermore, there is a relationship between primary tooth caries and the occurrence of stunting in children.

Stunting and dental caries in children are influenced by the interaction of various complex risk factors, such as low parental education levels, poor dietary quality, and low family socioeconomic status (Cianette, et al., 2017). The high prevalence of stunting and ECC (Early Childhood Caries) indicates a reciprocal relationship between nutritional deficiencies and poor oral health conditions (Zaragoza-Cortes, 2018). Poor oral hygiene and unhealthy feeding practices are interrelated and mutually influential. The combination of these factors, without adequate preventive measures, increases the risk of dental caries and nutritional deficiencies (Habimana, & Biracyaza, 2019).

Research in Sub-Saharan Africa shows that preschool-aged boys are more vulnerable to stunting and underweight compared to girls. This vulnerability is influenced by parenting patterns, nutritional access, and boys' greater susceptibility to infections. Differences in the allocation of attention and resources within families also play a role, emphasizing the need for targeted nutritional interventions to prevent these issues (Aprilia, 2022).

Another study by Hasana (2019) conducted in the Kotagede I Health Center area stated that gender does not affect the incidence of stunting, with a p-value of 0.649. However, the study noted that boys are more likely to experience stunting." This finding contrasts with the results of another study where Figure 4 showed that girls experienced more stunting (Sekarini, 2022).

CONCLUSION

It can be concluded that stunted children aged 2–5 years in Pulau Nyiur Village have a significant prevalence of rampant caries, with Type 3 being the most frequently observed. Additionally, the majority of stunted children in this study were male. These findings highlight the need for integrated interventions addressing both nutritional and dental health to reduce the prevalence of stunting and caries among young children.

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