

Analysis of Dental Caries & Gingivitis with the Occurrence of Stunting in Children in Makassar City (Tamalanrea Subdistrict)

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ABSTRACT

Introduction: Stunting is one form of undernutrition that is measured based on the 2005 WHO standard deviation. Stunting can be assessed by measuring height and age of H / A according to the WHO child growth standard i.e if the z-score of H / A <-2 SD. Dental caries is a decay process that occurs due to the process of dissolving tooth surface minerals and continues to develop go to the inner layer of tooth. Gingivitis is an inflammatory reaction from gingiva. Stunting can affect caries due to internal factors and external factors. Stunting does not affect the occurrence of gingivitis if nutrition is improved.

Objective: Find incidence of dental caries and gingivitis with stunting in children in Makassar city (Tamalanrea district).

Materials and Method: Observational analytic approach (cross-sectional study). Samples were selected from secondary data of tamalanrea health center as many as 208 people, each 104 people in the stunting and normal nutrition groups as a comparison.

Results: Based on the results of the study the average def-t index in

normal children was 5.37 while in stunting children was 7.37. From this data it can be seen that the def-t index in stunting children is higher than in normal children whereas gingivitis in normal children is 0.0% and stunting is 0.0%.

Conclusion: There is a relationship between stunting with the level of dental caries in children and there is no gingivitis in both stunting and normal children in Tamalanrea Health Center, Tamalanrea District, Makassar City.

Keywords: Stunting, Caries, Gingivitis

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INTRODUCTION

Short children (Stunting) is one form of undernutrition measured based on the WHO standard reference deviation year 2005. Stunting is measured by indicators of height measurement for the age of TB / U according to the WHO child growth standard, if the value is z-score TB/U <-2 SD.¹ Based on Riskesdas year 2013, the prevalence of stunting in Indonesia is 37,2%. Central Java is one of the provinces that has been focusing on the issue of stunting due to the fact that the stunting percentage possessed in 2016 and 2017 already exceeded the cut off (>20%) thus it is considered as public health problem which must be immediately solved.² Stunting in infants can cause various problems for toddlers, including affecting the time of eruption of milk teeth and increase the risk of dental caries.^{1,4,7}

The results of 2013 Ministry of Health Riskesdas of the Republic of Indonesia showed that 63% of Indonesia's population suffered from dental and oral diseases including dental caries and periodontal tissue diseases. Periodontal disease has a fairly high prevalence that affects humans almost all over the world and reaches 50% of the adult population. In Indonesia periodontal disease ranks second main which is still a problem in society with the prevalence of periodontal disease in all age groups in Indonesia at 96.58%. The most common periodontal disease is gingival inflammation or gingivitis.⁷

Gingivitis is an inflammatory reaction from gingiva caused by the accumulation of biofilms in the plaque around the gingival margin and the inflammatory response to bacteria. Clinical symptoms of gingivitis are characterized by changes

in color, shape changes, changes in consistency, changes in texture, and bleeding in the gingiva. Research conducted by Suhail and Al-Obaidi in Iraq stated that gingivitis was more prevalent in the malnourished group compared to the overweight group.⁷ The purpose of this study is to know dental caries and gingivitis with the occurrence of stunting in children in Makassar City (Tamalanrea subdistrict).

MATERIALS AND RESEARCH METHOD

Research type carried out is *Stratified Random Sampling*. The research was done in Tamalanrea subdistrict Makassar City, South Sulawesi by collecting secondary data from Community Health Center of Tamalanrea then examined the caries and gingivitis on stunting children and normal children at the age of 2.5 years old listed in the Community Health Center of Tamalanrea from April to May 2019.

Tools and materials used in this study are digital scales, microtoice, oral diagnostic tools, hands and masks, alcohol, betadine, stationery, and examination form sheets.

The stage of this study was to take secondary data at Tamalanrea health center, and proceed with examination of height and weight and examined the oral cavity of stunting children and normal children aged 2-5 years old who were present at the time the examination took place.

RESULT

This study has obtained information on ethical qualifications number: 0156/PL.09/KEPK FKG-RSGM

UNHAS/2019 and registration number UH 17120156 dated 15th May 2019. Based on the results of research conducted on children aged 2-5 years old registered in Tamalanrea Community

Health Center in Tamalanrea Subdistrict, Makassar City, the following results were obtained.

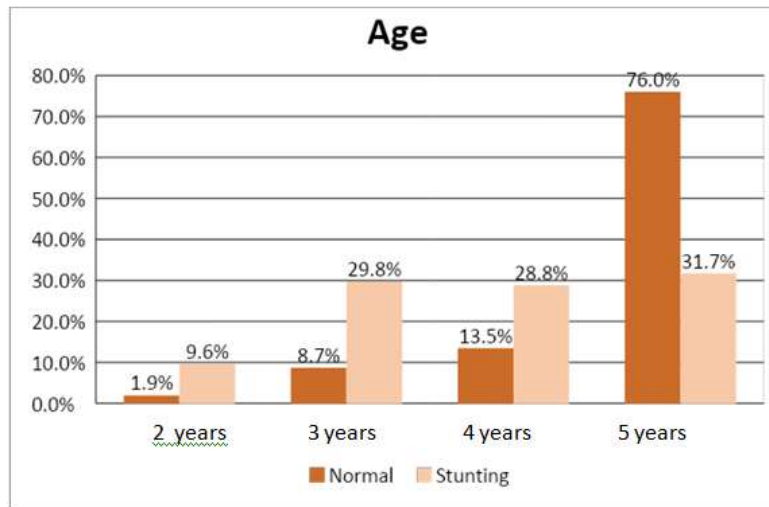


Figure 1: Normal and stunting by age

It can be seen normal and stunting children based on age group. In age group of 2 years old there are 2 (1.9%) normal people where those who were stunting are 10 people (9.6%). In age group of 3 years old there are 9 (8.7%) normal people whereas there are 31 people (29.8%) stunting. In age

group of 4 years old there are 14 (13.5%) normal people whereas there are 30 people (28.8%) stunting. In age group of 5 years old there are 79 (76.0%) normal people whereas there are 33 people (31.7%) stunting.

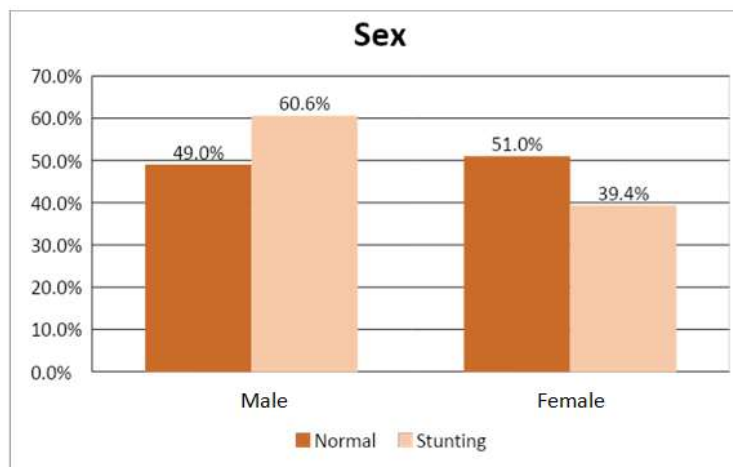


Figure 2: Normal and stunting by sex

It can be seen normal and stunting children based on sex. In normal male children in total of 51 people (49.0%) where stunting children in total of 63 people (60.6%). In normal

female in total of 53 people (51.0%) whereas stunting children in total 41 people (39.4%).

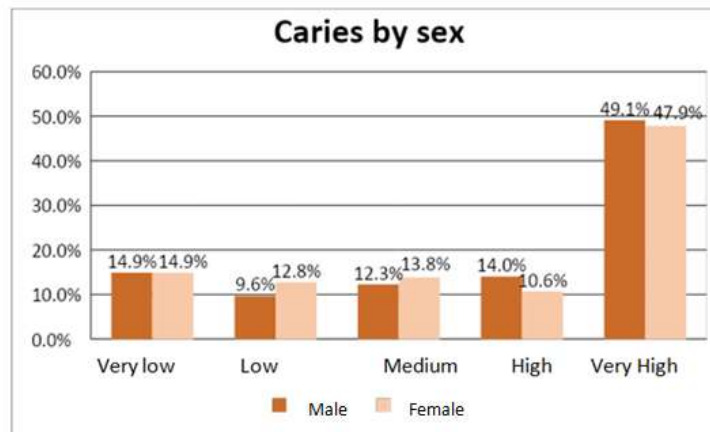


Figure 3: Caries by sex

It can be seen children caries based on sex. Male children with a very low caries number in total of 17 people (14.9%) low in total of 11 people (9.6%) medium in total of 14 people (12.3%) high in total of 16 people (14.0%) very high in total of 56 people (49.1%), while female children with

very low caries number in total of 14 people (14.9%) low in total of 12 people (12.8%) medium in total of 13 people (13.8%) high in total of 10 people (10.6%) and very high in total of 45 people (47.9%). From the above table it can be seen that male children is the most in percentage

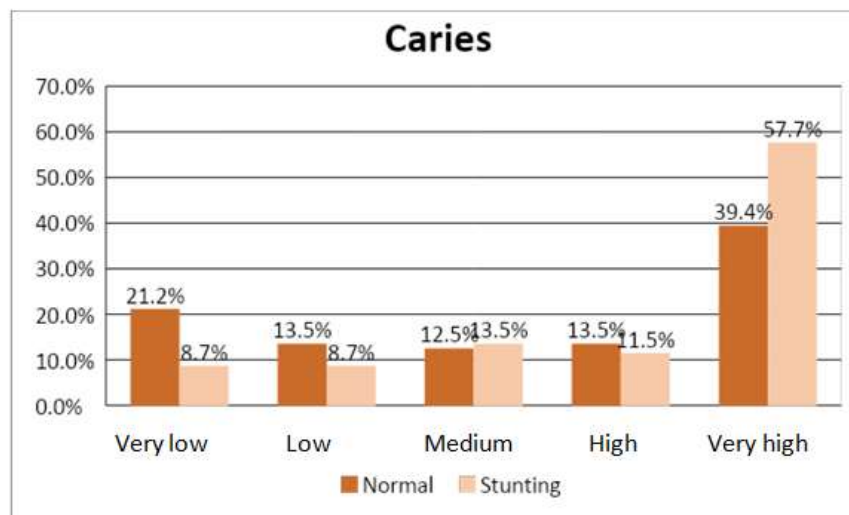


Figure 4: Caries index in normal and stunting children

It can be seen the level of caries that occurs in normal and stunting children based on TB/U standards. Very low caries C in normal children in total of 22 people (21.2%) while in stunting children in total of 9 people (8.7%). Low caries in normal children in total of 14 people (13.5%) while in stunting children numbered 9 people (8.7%). Moderate

caries in normal children in total of 13 people (12.5%) while in stunting children in total of 14 people (13.5%). High caries in normal children in total of 14 people (13.5%) while in stunting children in total of 12 people (11.5%). Very high caries in normal children in total of 41 people (39.4%) while in stunting children there are 60 people (57.7%).

Table 1: Def-t index

Category	Caries		P Value
	Mean	SD	
Normal	5.37	4.30	0.001
Stunting	7.37	4.56	

In the above table it can be observed that the average of def-t index in normal children is 5.37 (SD 4.30) while in stunting children is 7.37 (SD 4.56). From this data it can be seen that

the def-t index in stunting children is higher than in normal children and is also significant if seen from the value of $p = 0.001$

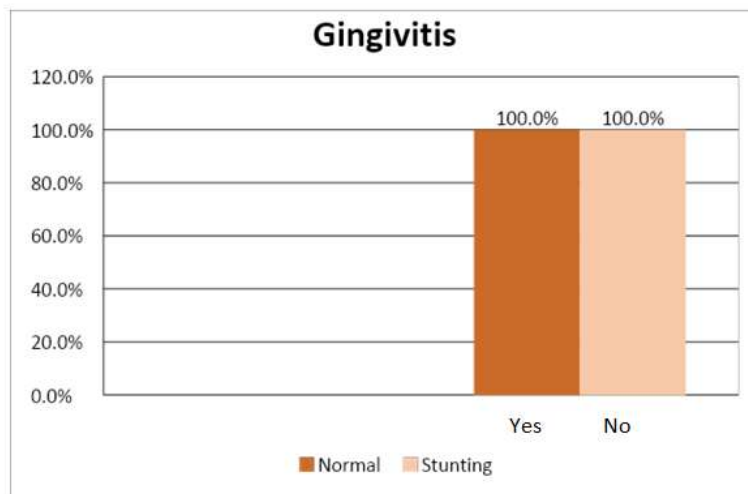


Figure 5: Gingivitis index based on nutritional status

It can be seen the incidence of gingivitis based on nutritional status. In normal children with gingivitis 0 (0.0%) while in stunting children with gingivitis 0 (0.0%).

DISCUSSION

The cooperative level of children when examined in a sample of 208 people was found in children who were cooperative in total of 193 people (92.8%), and those who were not cooperative in total of 15 people (7.2%). Which means that the cooperative children is on average 5 years old. 5 years old children preferred to do group activities and ready to participate compared to children aged 2-4 years who still possessed fear of sudden unexpected movements and very anxious if not accompanied by parents.^{8,9}

It can be seen that the incidence of high and very high caries was found in boys in total of 72 (63.1%) compared to girls in total of 55 (58.5%), probably because the boys were more numerous than girls. This study is in accordance with research conducted by Kiswaluyo in 2010, boys usually pay less attention to oral hygiene and are lazy to brush their teeth than girls, and maybe girls sometimes avoid sweets more than boys. However, it is different from the opinion of Suwelo (1992) who stated that the prevalence of dental caries in girls is higher than in boys.¹⁰

A total of 72 of the 104 subjects who experienced stunting with a high and very high caries incidence and can also be seen the average of def-t index in normal children 5.37 (SD 4.30) while in stunting children 7.37 (SD 4.56). From this data it can be seen that the def-t index in stunting children is higher than in normal children and is also significant if seen from the value of $p = 0.001$. This can occur due to the condition of chronic malnutrition in stunting children. Lack of nutrition also affects the composition of saliva. Calcium deficiency in saliva can interfere with the remineralization process. Demineralization occurs if pH of mouth is below 4.5 and after the pH of the mouth returns to normal, 7 remineralization processes occur. This remineralization

process requires a certain amount of calcium and phosphate which must be saturated in saliva. If the remineralization process does not occur, demineralization will continue thus caries will occur.^{11,6}

With high education, parents will be able to capture and adopt information well. In accordance with research conducted by Ikhsan (2005) which stated that with higher education, community members have a high level of academic ability to be able to develop or create knowledge, technology and arts for human welfare. In line with Soetjningsih's research, the growth and development of children is determined by the education of parents. Parents with a high education then would process information that is beneficial to themselves and their families, relating to how to care for children, take care of children's health, education and others. In terms of food consumption, too.¹⁵

The lack of knowledge that affects parenting and nutrition is a caries factor in children. Especially in the first 1000 days of life that can cause stunting and an increased risk of caries due to the lack of nutrition besides the low level of parental knowledge affects the pattern of children who maintain the health of children. If parents do not have a low level of knowledge and socioeconomic. So most likely parents do not have information and cannot teach their children how to maintain good oral health. So the child is susceptible to caries because the child cannot maintain his dental health properly.¹⁶

Thus there is the urgency on the need to provide education to parents and about parenting and nutrition, especially 1000 days of life. And for children who are stunted. Education needs to be given about the importance of maintaining healthy teeth and mouth and good nutrition patterns. So it does not occur in the permanent front teeth. In addition, dental caries must be treated with care to prevent worse complications in the future.¹⁸

In figure 8 it can be seen the incidence of gingivitis based on short nutritional status (stunting). In normal children who

have gingivitis 0 (0.0%) while in stunting children who have gingivitis 0 (0.0%). One cause of children affected by gingivitis is the lack of nutrition. But it can be seen in figure 8 that there is no gingivitis in a stunting child. Short nutritional status (stunting) occurs because of chronic nutritional deficiencies from the first 1000 days of life, from the womb to the age of 2 years. After the first 1000 days the condition of chronic malnutrition which causes the child to become stunted is irreversible. But it can be done to improve children's nutrition, although not as much as children in the first 1000 days with good nutrition. Children who are stunted are likely to have improved nutrition when their parents see the condition of their children who are shorter than they should, so the nutritional status is no longer in a state of malnutrition, it's just that the physical appearance of stunting cannot change. This could be the reason why no gingivitis was found in stunted children because the malnutrition condition only occurred in the first 1000 days of life, and not in the phase when the child was examined. So in this study there was no gingivitis in stunted children because the child might have improved nutrition.^{19,20,21,22,23}

CONCLUSION

Based on the research that has been done, it can be concluded that there is a significant difference in the level of dental caries in normal and stunting children ($p = 0.001$) and there is no gingivitis in stunting or normal children in Tamanrenea Community Health Center, Tamanrenea Subdistrict, Makassar City.

CONFLICT OF INTEREST

There is no conflict of interest in this study

SOURCE OF FUNDING

Domestic Government

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