Differences in Quality of Life of Stunting Children based on Caries Status in Indonesia

Diferenças na qualidade de vida de crianças com nanismo baseado no status de cárie na Indonésia

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ABSTRACT

Objective: The aim of this study was to determine the difference in quality of life of stunting children in Enrekang District based on their caries status. **Material and Methods:** This study was an observational analitic study with a cross sectional design, conducted in Buntu Batu, Baraka, and Malua Sub-district of Enrekang District on April 29-May 3, 2019. Height measurements, def-t/DMF-T, pufa/PUFA assessment of stunting children 6-12 years old, and assessment of quality of life related to oral health of children 8-12 years using the CPQ questionnaire. Data were collected, 123 children suffered from stunting. **Results:** Based on the Mann Whitney Test, p value < 0.05 showed that there were differences that statistically significant on def-t and pufa to quality of life of 8-10 years. The p value > 0.05 indicates that there are no significant differences in def-t/DMF-T and pufa/PUFA to quality of life of 11-12 years stunting children. **Conclusion:** There are differences in caries of primary teeth between stunting children aged 8 -10 years to their quality of life. At the age of 11-12 years there is no difference in caries to quality of life in Enrekang District.

KEYWORDS

Caries; Quality of life; Stunting.

RESUMO

Objetivo: O objetivo deste estudo foi determinar a diferença na qualidade de vida de crianças com nanismo no Distrito de Enrekang, com base no status de cárie. Material e métodos: Este estudo foi um estudo analítico observacional com um desenho transversal, realizado no Subdistrito de Buntu Batu, Baraka e Malua, no Distrito de Enrekang, de 29 de abril a 3 de maio de 2019. Medidas de altura, def-t/DMF-T, pufa/PUFA de crianças com nanismo de 6 a 12 anos, e avaliação da qualidade de vida relacionada à saúde bucal de crianças de 8 a 12 anos usando o questionário CPQ. Os dados foram coletados e 123 crianças sofriam de nanismo. Resultados: Com base no teste de Mann Whitney, o valor de p < 0,05 mostrou que houve diferenças estatisticamente significantes em def-t e pufa entre a qualidade de vida de 8 a 10 anos com nanismo em crianças com impacto e aquelas sem impacto, enquanto os valores de p = 0,05 e 0,295 apresentaram diferenças não significativas no DMF-T e no PUFA. O valor de p> 0,05 indica que não há diferenças significativas em def-t / DMF-T e pufa / PUFA entre a qualidade de vida de 11 a 12 anos com nanismo em crianças com impacto e aquelas que não têm impacto. Conclusão: Existem diferenças na cárie de dentes decíduos entre crianças com nanismo entre 8 e 10 anos que causam impacto e aquelas que não têm impacto na qualidade de vida. No entanto, não há diferença nos dentes permanentes. Na idade de 11 a 12 anos, não há diferença na cárie entre dentes decíduos e dentes permanentes entre aqueles que causam impacto e aqueles que não causam impacto.

PALAVRAS-CHAVE

Qualidade de vida; Status de cárie; Nanismo.

INTRODUCTION

Stunting is a condition of child who have a length or height lower than age. This condition is measured by length or height in stunting patients <-2 SD of median child growth standards from WHO. Stunting is caused by socio-economic conditions, maternal nutrition during pregnancy, disease of infants, and lack of nutritional intake of infants. [1,2]

In 2017, around 150.8 million children (22.2%) in the world experienced stunting, more than half of stunting children in the world were from Asia (55%) while more than a third (39%) lived in Africa. Of the 83.6 million stunting children in Asia, the largest proportion comes from South Asia (58.7%) and the smallest proportion in Central Asia (0.9%). [1]

Stunting is a nutritional problem that affects mainly developing countries. Stunting prevalence in developing countries such as Niger and Pakistan was 51% and 44% respectively in 2011, while in developed countries, the United States as much as 3.5% in 2016, South Korea as much as 2.5% in 2010. [3,5]

Indonesia is a country with the fifth largest stunting population in the world. More than a third (37%) of children under five years old suffered stunting in 2013, 19.2% of children were short and 18.0% were very short. In 2013 the prevalence of stunting children in South Sulawesi increased again at around 41% from 2010 (38.9%). Enrekang District is the district of South Sulawesi with the highest stunting prevalence (53.37%) in 2013. [4,6,7]

Children under five years old or two years old who experience stunting will have a level of intelligence that is not maximal, making children more vulnerable to disease and can be the risk of declining levels of productivity in future. Regarding efforts to reduce and handle stunting prevalence, the government at the national level issued various policies that are expected to contribute to reduction of stunting prevalence, including among others Minister of Health Regulation (Permenkes) No.15 / 2013 concerning Procedures for Providing Special Facilities for Breastfeeding and / or milking Mother's Milk, Permenkes No.3 / 2014 concerning Community-Based Total Sanitation (STBM), Permenkes No.23 / 2014 concerning Improvement Efforts Nutrition. Enrekang Regency is one of the districts included in 100 Regencies / Cities that prioritize the intervention of small children. The Intervention Framework conducted by the Government of Indonesia is divided into two, namely Specific Nutrition Interventions and Sensitive Nutrition Interventions.

Enrekang Distirct is one of the districts included in the 100 priority districts/cities for stunting. The framework of stunting interventions carried out by the Government of Indonesia is divided into two, Specific Nutrition Interventions and Sensitive Nutrition Interventions. [7-10]

Dental and oral health problems are one of the public health problems that require comprehensive care because of their wide impact. About 25.9% of Indonesia's population has dental and oral health problems, with South Sulawesi Province being the province that has the highest prevalence of dental and oral health problems about 36.2%. The relationship between children's oral health and general health has become the subject of increasingly interesting research. One of the most common dental diseases is dental caries. [11,12]

Accumulating evidence indicates that dental caries negatively affects children's nutritional status and growth. According to recent systematic reviews, some studies reported an association between dental caries and underweight, stunting and failure to thrive. An opposite theory is that undernutrition (underweight and stunting) could predispose a person to dental caries. Chronic undernutrition has been associated with disturbed dental development, including enamel defects (hypoplasia) and delayed eruption of the primary teeth. However, evidence of the effect of undernutrition on the formation and eruption of permanent teeth is less substantial.. Other studies revealed in general that the rates of dental caries that were left untreated in primary teeth were highest in underweight children, as well as in stunting children and lowest in children with

overweight. [13-15]

Based on Riskesdas data in 2013 the prevalence of active caries in Indonesia was 53.2%. The DMFT index (Decayed, Missing and Filled Teeth) is 4.6. Whereas based on Riskesdas 2018, caries pervalence at ages 5-9 and 10-14 were 92.6%, and 73.4%. [6,16]

Children with untreated dental caries often suffer from a decrease in oral health related quality of life (OHRQoL) compared to children with caries free. Dental caries has a significant negative impact on social and psychological function in children. Poor dental health has a significant impact on growth, as well as children's cognitive development in the long term by interfering with nutrition and producing low weight and height for age. [17]

Based on the description we interested to know differences in quality of life of stunting children in Enrekang District based on their caries status.

MATERIALS AND METHODS

Survey design

The type of this research was observational analytic study with cross sectional design. This research was conducted in Enrekang District, Buntu Batu Sub district, Baraka, and Malua in 6 elementary schools: SDN 94 Balla, SDN 20 Baraka, SDN 114 Balombong, SDN 24 Malua, SDN 106 Panyurak, and SDN 5 Pasui on April 29 to May 3, 2019.

Sample

The target population of this study was stunting children aged 6-12 years in three sub-districts with the highest prevalence of stunting in Enrekang District, which is Baraka, Malua, and Buntu Batu sub-district. The sample method in this study is stratified random sampling. Enrekang District is the district with the highest stunting rate in South Sulawesi with Baraka, Malua, Buntu Batu Subdistricts are the highest stunting rates. In Baraka sub-district there are 22 elementary schools, there are 11 elementary schools in Malua sub-districts, and there are 16 elementary schools in Buntu Batu sub-districts. Then the elementary school was taken randomly by lottery to get 3 elementary schools in Baraka sub-district, 1 elementary school in Malua sub-district, and 2 in Buntu Batu sub-district. Height and intraoral examination in grade 1-6 children were carried out by 405 people, 334 children completed the questionnaire completely, and 123 of them had stunting.

Data collection

1. Height measurement

Height measurements were measured with an accuracy of 0.1 centimeters. Height data were converted into z scores high for age with WHO Anthroplus software, which used WHO 2007 Growth references, < -2 SD: stunting, < -3 SD: severely stunted, ≥ -2 SD: not stunted.

2. Assessment for dental caries using the DMF-T/def-t index and pufa/ PUFA. D/d (decayed), M/e (Missing), F/f(Filling). Average DMF-T/def-t is the sum of all def / DMF values divided by the number of people examined. PUFA is the index used to assess oral conditions resulting from untreated caries. P/p: Involvement of the pulp, U/u: Ulceration, F/f: Fistula, A/a: Abscess. The PUFA/pufa score per person is calculated in the same cumulative manner as DMFT/dmft. [19,20]

3. Assessment of oral health related to quality of life of children.

The quality of life of children aged 8-10 was measured using the Child Perception Questionnaire (CPQ8-10), while children aged 11-12 years used the Child Perception Questionnaire (CPQ11-14). CPQ consists of questions with 4 dimensions which is oral symptoms, functional limitations, emotional well-being, and social well-being.

Each question is given a score of 0-4 (0 for never, 1 for one/two times, 2 for sometimes, 3 for often and 4 for almost every day/ every day). A score of 0-2 is categorized as not having an impact, and a score of 3-4 is categorized as having an impact. [21]

5. Characteristics and sociodemographic information.

Each child brings a questionnaire back home and is filled in by parents, and returned the next day. Data analysis using SPSS 25.0 with Mann Whitney test.

Ethics aspect

Permission was obtained from Faculty of Dentistry, Ethics and Research Advisory Committee, Hasanuddin University number 0193/PL.09/KEPK FKG-RSGM UNHAS/2019. Informed consent was obtained from all the subjects.

RESULT

Based on gender, there were more male samples, as many as 65 people. Based on ethnicity and religion, the most number are Bugisnese with 90 people, and Islam as many as 123 people.

Based on the householder latest education level, the samples most samples were graduated from high school as many as 54 people. Farmers are the most owned jobs by householder from the study sample, which is 72 people. The most income per month is Rp. 0-Rp.150,000 for 32 people. And 101 people with the distance from the house to the hospital is 0-5 km.

Based on infectious diseases, 105 children had infectious diseases (ARI and diarrhea) in the last 3 months. Twenty-eight children have low birth weight (< 2.5 kg). 46 children were not fully immunized. Twenty children were not given exclusive breastfeeding.

Table II - Prevalence of stunting and not-stunted in the sub-districts of Baraka, Malua, and Buntu Batu

Sub-district	n	Stunting		Not stunted	
		n	%	n	%
Baraka	160	61	49,6	99	46,9
Malua	77	25	20,3	52	24,6
Buntu Batu	97	37	301	60	28,4
Total	334	123	100	211	100

Primary Data, 2019

Based on table II, out of 334 children who returned and filled out the questionnaire completely, 123 of them suffered from stunting. The majority of stunting children in Baraka Sub-district were 61 people (49.6%), and 99 were not stunted (46.9%).

Table III - Distribution of mean def-t based on age and gender in stunting (n = 123)

Variabel	n	d	e	f	def-t
		(Mean ± SD)			(Mean ± SD)
Age (Years)					
6-7	33	6.15 ± 2,37	0,85 ± 0,8	0.12 ± 0,42	7,12 ± 2,39
8-10	70	3.11 ± 2.26	0.87 ± 0.87	0.14 ± 0.43	4.09 ± 2.53
11-12	20	1.35 ± 1.23	0.60 ± 0.99	0.00	1.95 ± 1.70
Gender					
Male	65	3.97 ± 2.83	1.05 ± 0.93	0.14 ± 0.43	5.15 ± 2.98
Female	58	3.28 ± 2.53	0.57 ± 0.73	0.09 ± 0.34	3.93 ± 2.76
Total	123	3.54 ± 2.70	0.82 ± 0.87	0.11 ± 0.39	4.55 ± 2.93

SD: Standard Deviation, (Primary Data, 2019)

Table IV - Distribution of mean DMF-T based on age and gender in stunting (n = 123)

Variabel	n	D	M	F	DMF-T
		(Mean ± SD)			(Mean ± SD)
Age (Years)					
6-7	33	0.03 ± 0.17	0.00	0.00	0.03 ± 0.17
8-10	70	0.26 ± 0.76	0.09 ± 0.37	0.00	0.34 ± 0.81
11-12	20	1.20 ± 1.24	0.00	0.00	1.20 ± 1.24
Gender					
Male	65	0.18 ± 0.53	0.02 ± 0.12	0.00	0.20 ± 0.54
Female	58	0.53 ± 1.08	0.09 ± 0.39	0.00	0.62 ± 1.11
Total	123	0.35 ± 0.85	0.05 ± 0.28	0.00	0.40 ± 0.88

Table III shows the mean def-t values. Based on age, the mean def-t with value 7.12 ± 2.39 was highest at the age of 6-7 years. Based on gender, the mean def-t value was higher for men with mean value of 5.15 ± 2.98.

Table IV presents the mean values of DMF-T. Based on age, the mean DMF-T with value 1.20 ± 1.24 was highest at the age of 11-12 years. Based on gender, the mean value of DMF-T was higher for women with an mean values of 0.62 ± 1.11.

Table V - Distribution of samples based on caries status of primary teeth (n = 123)

Caries status	n	%
Very low	17	13.8
Low	15	12.2
Moderate	32	26
High	32	26
Very high	27	22
Total	123	100

Primary Data, 2019.

Table VI - Distribution of samples based on permanent dental caries status (n = 123)

Caries status	n	%
Very low	109	88.6
Low	10	8.1
Moderate	3	2.4
High	1	0.8
Very high	0	0
Total	123	100

Table V shows the distribution of samples based on caries status using the def-t index. Most of the samples had moderate and high caries status of 32 people (26%).

Table VI shows the distribution of samples based on caries status using the DMF-T index. Most of the samples had very low caries status of 109 people (88.6%).

Table VII - Distribution of mean puffs by age and gender in stunting (n = 123)

Variabel	n	p	u	f	a	pufa
		(Mean ± SD)				(Mean ± SD)
Age (Years)						
6-7	33	4.91 ± 2.32	0.03 ± 0.17	0.03 ± 0.17	0.27 ± 0.57	5.24 ± 2.57
8-10	70	2.59 ± 2.14	0.23 ± 0.49	0.04 ± 0.20	0.14 ± 0.35	3.00 ± 2.21
11-12	20	1.20 ± 1.15	0.00	0.00	0.10 ± 0.31	1.30 ± 1.17
Gender						
Male	65	3.35 ± 2.57	0.12 ± 0.38	0.05 ± 0.21	0.12 ± 0.33	3.65 ± 2.72
Female	58	2.57 ± 2.18	0.16 ± 0.41	0.02 ± 0.13	0.22 ± 0.50	2.97 ± 2.29
Total	123	2.98 ± 2.42	0.14 ± 0.39	0.03 ± 0.18	0.17 ± 0.42	3.24 ± 2.57

SD: Standard Deviation, (Primary Data, 2019)

Table VIII - Distribution of mean PUFAs based on age and sex in stunting (n = 123)

Variabel	n	P	U	F	A	PUFA
		(Mean ± SD)				(Mean ± SD)
Age (Years)						
6-7	33	0.00	0.00	0.00	0.00	0.00
8-10	70	0.09 ± 0.33	0.00	0.00	0.01 ± 0.12	0.10 ± 0.42
11-12	20	0.05 ± 0.69	0.00	0.00	0.10 ± 0.31	0.60 ± 0.75
Gender						
Male	65	0.08 ± 0.32	0.00	0.00	0.02 ± 0.12	0.09 ± 0.34
Female	58	0.19 ± 0.48	0.00	0.00	0.03 ± 0.19	0.22 ± 0.59
Total	123	0.13 ± 0.40	0.00	0.00	0.02 ± 0.15	0.15 ± 0.48

SD: Standard Deviation, (Primary Data, 2019)

Table VII shows mean values of pufa. Based on age, the mean values of pufa was highest at the age of 6-7 years which is 5.24 ± 2.57. Based on gender, the mean pufa values were higher in men with mean value of 3.65 ± 2.72.

Table VIII presents the average PUFA values. Based on age, the highest average PUFA at 11-12 years is 0.60 ± 0.75. Based on gender, the mean PUFA value was higher for women with mean value of 0.22 ± 0.59.

Table IX - Distribution of sample answers based on the Child Perceptions Questionnaire 8-10 (CPQ8-10) question regarding quality of life related to oral health of children aged 8-10 years with stunting (n = 70)

Questionnaire	Never		Once or twice		Sometimes		Often		Everyday	
	n	%	n	%	n	%	n	%	n	%
Oral symptoms										
Pain in teeth or mouth	13	18.6	15	21.4	33	47.1	9	12.9	0	0.0
Sore spot in the mouth	38	54.3	3	4.3	18	25.7	9	12.9	2	2.9
Pain when drinking cold drinks	18	25.7	5	7.1	35	50.0	12	17.1	0	0.0
Food stuck	9	12.9	8	11.4	28	40.0	17	24.3	8	11.4
Bad breath	21	30.0	9	12.9	19	27.1	16	22.9	5	7.1
Functional limitations										
Longer time to eat meal	29	41.4	12	17.1	23	32.9	6	8.6	0	0.0
Had a hard time bitting or chewing food	22	31.4	17	24.3	22	31.4	8	11.4	1	1.4
Had trouble eating food	32	45.7	15	21.4	17	24.3	6	8.6	0	0.0
Had trouble saying some words	42	60.0	7	10.0	14	20.0	3	4.3	4	5.7
Had a problem ssleeping at night	26	37.1	11	15.7	27	38.6	6	8.6	0	0.0
Emotional well-being										
Been upset	19	27.1	18	25.7	24	34.3	7	10.0	2	2.9
Felt frustrated	40	57.1	5	7.1	17	24.3	7	10.0	1	1.4
Shy	31	44.3	8	11.4	22	31.4	9	12.9	0	0.0
Been concerned what other people think	31	44.3	8	11.4	18	25.7	12	17.1	1	1.4
Worried because not as good looking	39	55.7	6	8.6	10	14.3	11	15.7	4	5.7
Social well-being										
Missed school	41	58.6	12	17.1	15	21.4	2	2.9	0	0.0
Had a hard time doing homework	35	50.0	7	10.0	25	35.7	3	4.3	0	0.0
Had a hard time paying attention in school	36	51.4	5	7.1	24	34.3	5	7.1	0	0.0
Not wanted to speak or read out load	34	48.6	8	11.4	13	18.6	15	21.4	0	0.0
Tried not to smile or laugh	37	52.9	9	12.9	15	21.4	9	12.9	0	0.0
Not wanted to talk to other children	37	52.9	16	22.9	12	17.1	5	7.1	0	0.0
Not wanted to be with other children	44	62.9	7	10.0	10	14.3	8	11.4	1	1.4
Stay away from activities like sports and clubs	42	60.0	6	8.6	19	27.1	3	4.3	0	0.0
Other children teased you or called you names	49	70.0	4	5.7	12	17.1	5	7.1	0	0.0
Other children ask you question	34	48.6	6	8.6	25	35.7	4	5.7	1	1.4

Primary Data, 2019

On the dimension of oral symptoms the most frequently complained by children is food stuck in the teeth, 17 children (24.3%). On the dimension of functional complaints that most children feel is had a hard time bitting or chewing food, 8 children (11.4%). In emotional complaints the most often complained of by children is been concerned what other people think ,12 children (17.1%). At the dimension of the social limitation, the complaints that were most often felt by children were not wanted to speak or read out load, 15 children (21.4%).

Table X - Impact of quality of life related to oral health (CPQ8-10) in children with stunting aged 8-10 years (n = 70)

Dimension	CPQ$_{8\text{-}10}$ category	n	%	Total n (%)
Oral symptom	No impact	52	74,3	70(100)
	Impact	18	25,7	
Functional limitation	No impact	63	90	70(100)
	Impact	7	10	
Emotional well-being	No impact	58	82,9	70(100)
	Impact	12	17,1	
Social well-being	No impact	64	91,4	70(100)
	Impact	6	8,6	
Total score CPQ$_{8\text{-}10}$	No impact	58	82,9	70(100)
	Impact	12	17,1	

Primary Data, 2019

In table X, shows that samples with quality of life have the most impact on the dimensions of oral symptoms, 18 samples (25.7%), while the least are those in the social well-being dimension, 6 samples (8.6%). In total CPQ8-10 score, the number that did not have an impact was 58 samples (82.9%), while the number that had an impact was 12 samples (17.1%).

Table XI - Mean differences of def-t / DMF-T based on quality of life related to oral health of children aged 8-10 years with stunting (n = 70)

Quality of life category	n	d (Mean ± SD)	e (Mean ± SD)	f (Mean ± SD)	def-t (Mean ± SD)	p
No impact	58	2.40 ± 1.67	0.83 ± 0.75	0.16 ± 0.45	3.33 ± 1.88	0.00*
Impact	12	6.58 ± 1.24	1.08 ± 1.31	0.08 ± 0.29	7.75 ± 2.05	
		D (Mean ± SD)	M (Mean ± SD)	F	DMF-T (Mean ± SD)	
No impact	58	0.31 ± 0.82	0.10 ± 0.41	0.00	0.41 ± 0.88	0.05
Impact	12	0.00	0.00	0.00	0.00	

Mann Whitney test, *Significant p<0.05
SD: Standard Deviation, (Primary Data, 2019)

The mean def-t is higher in children with an impact quality of life which is 7.75 ± 2.05. Based on the results of the statistical test, the value of p = 0.00 (p <0.05) indicates that there is a significant difference in the mean of def-t between stunting children aged 8-10 years who have impact and those who have no impact on their quality of life.

The mean DMF-T is higher in children with a quality of life that is not affected by 0.41 ± 0.88. Based on the results of statistical tests, the value of p = 0.05 (p = 0.05) indicates that there is a significant difference in DMF-T that is not significant between the quality of life and the impact on children with stunting patients aged 8-10 years between stunting children aged 8-10 years who have impact and those who have no impact on their quality of life.

Table XII - Differences in mean pufa/ PUFA based on quality of life related to oral health of children with stunting aged 8-10 years (n = 70)

Quality of life category	n	p (Mean ± SD)	u (Mean ± SD)	f (Mean ± SD)	A (Mean ± SD)	Pufa (Mean ± SD)	p
No impact	58	2.03 ± 1.64	0.22 ± 0.50	0.03 ± 0.18	0.14 ± 0.35	2.43 ± 1.66	0.00*
Impact	12	5.25 ± 2.34	0.25 ± 0.45	0.08 ± 0.29	0.17 ± 0.39	5.75 ± 2.53	
		P (Mean ± SD)	U (Mean ± SD)	F (Mean ± SD)	A (Mean ± SD)	PUFA (Mean ± SD)	
No impact	58	0.10 ± 0.36	0.00	0.00	0.02 ± 0.13	0.12 ± 0.46	0.295
Impact	12	0.00	0.00	0.00	0.00	0.00	

Mann Whitney test, *Significant p<0.05
SD: Standard Deviation, (Primary Data, 2019)

The highest pufa value was found in children with an impact on quality of life of 5.75 ± 2.53. Based on the results of statistical tests, the value of p = 0.00 (p < 0.05) indicates that there is a significant difference in pufa between between stunting children aged 8-10 years who have impact and those who have no impact on their quality of life.

The highest average PUFA was found in children with not impact quality of life was 0.12 ± 0.46. Based on the results of statistical tests, the value of p = 0.295 (p > 0.05) indicates that there is no significant difference in DMF-T between stunting children aged 8-10 years who have impact and those who have no impact on their quality of life.

Table XIII - Distribution of sample answers based on the Child Perceptions Questionnaire 11-14 (CPQ11-14) question regarding quality of life related to oral health of children aged 11-12 years. (n = 20)

Questionnaire	Never		Once or twice		Sometimes		Often		Everyday	
	n	%	n	%	n	%	n	%	n	%
Oral symptoms										
Pain in teeth, lips, jaws or mouth	1	5.0	8	40.0	6	30.0	5	25.0	0	0.0
Bleeding gums	11	55.0	2	10.0	7	35.0	0	0.0	0	0.0
Mouth scores	7	35.0	2	10.0	8	40.0	3	15.0	0	0.0
Bad breath	12	60.0	0	0.0	2	10.0	4	20.0	2	10.0
Food caught between/in teeth	0	0.0	4	20.0	5	25.0	6	30.0	5	25.0
Food stuck to roof of mouth	9	45.0	3	15.0	3	15.0	5	25.0	0	0.0
Functional limitations										
Breathing trough the mouth	11	55.0	2	10.0	3	15.0	4	20.0	0	0.0
Taken longer than others to eat a meal	10	50.0	2	10.0	5	25.0	3	15.0	0	0.0
Trouble sleeping	9	45.0	3	15.0	4	20.0	4	20.0	0	0.0
Difficult to bite or chew food like apples, corn on the cob or steak	8	40.0	4	20.0	6	30.0	2	10.0	0	0.0
Difficult to open your mouth wide	9	45.0	1	5.0	3	15.0	7	35.0	0	0.0
Difficult to say any words	11	55.0	2	10.0	5	25.0	2	10.0	0	0.0
Difficult to eat foods	8	40.0	4	20.0	6	30.0	2	10.0	0	0.0
Difficult to drink with a straw	12	60.0	2	10.0	1	5.0	5	25.0	0	0.0
Difficult to drink or eat hot or cold foods	9	45.0	1	5.0	7	35.0	3	15.0	0	0.0
Emotional well-being										
Iritable/frustrated	11	55.0	2	10.0	2	10.0	1	5.0	4	20.0
Felt unsure of yourself	13	65.0	1	5.0	3	15.0	2	10.0	1	5.0
Shy/embarrassed	11	55.0	2	10.0	3	15.0	1	5.0	3	15.0
Concerned with what other people think	13	65.0	4	20.0	3	15.0	0	0.0	0	0.0
Worried that is less attractive than other people	11	55.0	3	15.0	3	15.0	2	10.0	1	5.0
Upset	7	35.0	3	15.0	6	30.0	4	20.0	0	0.0
Nervous or afraid	11	55.0	2	10.0	7	35.0	0	0.0	0	0.0
Worried that is less healthy than other people	11	55.0	0	0.0	8	40.0	1	5.0	0	0.0
Worried that is different than other people	8	40.0	4	20.0	6	30.0	2	10.0	0	0.0
Social well-being										
Missed school because of pain, appointment or surgery	16	80.0	4	20.0	0	0.0	0	0.0	0	0.0
Had hard time paying attention in school	9	45.0	6	30.0	0	0.0	5	25.0	0	0.0
Had difficulty doing your homework	9	45.0	7	35.0	2	10.0	2	10.0	0	0.0
Not wanted to speak/read out loud in class	10	50.0	7	35.0	3	15.0	0	0.0	0	0.0
Not wanted/been unable to participate in sports, clubs	12	60.0	0	0.0	8	40.0	0	0.0	0	0.0
Not wanted to talk to other children	14	70.0	1	5.0	5	25.0	0	0.0	0	0.0
Avoided smiling/laughing when around other children	11	55.0	4	20.0	5	25.0	0	0.0	0	0.0
Had difficulty playing a musical instrument such as a recorder, flute, clarinet,trumpet	13	65.0	2	10.0	2	10.0	3	15.0	0	0.0
Not wanted to spend time with other children	15	75.0	2	10.0	3	15.0	0	0.0	0	0.0
Argued with other children or your family	13	65.0	5	25.0	2	10.0	0	0.0	0	0.0
Teased/called names by other children	11	55.0	1	5.0	5	25.0	3	15.0	0	0.0
Left out by other children	17	85.0	0	0.0	0	0.0	3	15.0	0	0.0
Asked questions about your teeth, lips, jaws or mouth by other children	9	45.0	0	0.0	10	50.0	1	5.0	0	0.0

Primary Data, 2019

In addition, the most common oral symptoms that children complain about are food caught between/in teeth, 6 children (30%). In the functional limitation dimension the most common complaint children feel is that difficult to open your mouth wide, 7 children (35%). In the emotional complaints dimension, most of children complain about upset, 4 children (20%). In the case of social limitations, the complaints that are most often felt by children are had hard time paying attention in school, 5 children (25%).

Table X - Impact of quality of life related to oral health (CPQ11-14) in children with stunting aged 11-12 years (n = 20)

Dimension	CPQ$_{11-14}$ category	n	%	Total n (%)
Oral symptom	No impact	15	75	20(100)
	Impact	5	25	
Functional limitation	No impact	15	75	20(100)
	Impact	5	25	
Emotional well-being	No impact	16	80	20(100)
	Impact	4	20	
Social well-being	No impact	20	100	20(100)
	Impact	0	0	
Total score CPQ$_{8-10}$	No impact	15	75	20(100)
	Impact	5	25	

Primary Data, 2019

In table XIV, shows that samples with quality of life have the most impact on the dimensions of oral symptoms and functional limitations, 5 samples (25%) in each dimension. Whereas in the social well-being dimension all samples had not impact category, 20 samples (100%). While for total CPQ11-14 scores, the number that did not have an impact was 15 samples (75%), while the number that had an impact was 5 samples (25%).

Table XV - Mean differences of def-t / DMF-T based on quality of life related to oral health of children with stunting aged 11-12 years (n = 20)

Quality of life category	n	d	e	f	def-t (Mean ± SD)	p
		(Mean ± SD)				
No impact	15	1.53 ± 1.19	0.80 ± 1.08	0.00	2.33 ± 1.68	0.095
Impact	5	0.80 ± 1.30	0.00	0.00	0.80 ± 1.30	

Quality of life category	n	D	M	F	DMF-t (Mean ± SD)	p
		(Mean ± SD)				
No impact	15	1.13 ± 1.30	0.00	0.00	1.13 ± 1.30	0.553
Impact	5	1.40 ± 1.14	0.00	0.00	1.40 ± 1.14	

Mann Whitney test, *Significant p<0.05
SD: Standard Deviation, (Primary Data, 2019)

The mean def-t higher in children with quality of life did not affect 2.33 ± 1.68. Based on the results of statistical tests, p value = 0.095 (p > 0.05) shows that there are no significant differences in the mean def-t between stunting children aged 11-12 years who have impact and those who have no impact on their quality of life.

The mean DMF-T is higher in children with an impact on quality of life of 1.40 ± 1.14. Based on the results of statistical tests, p value = 0.553 (p > 0.05) shows that there was no significant difference in DMF-T between stunting children aged 11-12 years who have impact and those who have no impact on their quality of life.

Table XVI - Mean differences of pufa / PUFA based on quality of life related to oral health of children with stunting aged 11-12 years (n = 20)

Quality of life category	n	p	u	f	A	Pufa (Mean ± SD)	p
		(Mean ± SD)					
No impact	15	1.47 ± 1.19	0.00	0.00	0.07 ± 0.26	1.53 ± 1.19	0.123
Impact	5	0.40 ± 0.55	0.00	0.00	0.20 ± 0.45	0.60 ± 0.89	

		P	U	F	A	PUFA (Mean ± SD)	
		(Mean ± SD)					
No impact	15	0.47 ± 0.64	0.00	0.00	0.00	0.47 ± 0.64	0.243
Impact	50	0.60 ± 0.89	0.00	0.00	0.40 ± 0.55	1.00 ± 1.00	

Mann Whitney test, *Significant p<0.05
SD: Standard Deviation, (Primary Data, 2019)

The highest average puffs found in children with quality of life did not affect 1.53 ± 1.19. Based on the results of statistical tests, p value = 0.123 (p> 0.05) indicates that there is no significant difference in mean of pufa between stunting children aged 11-12 years who have impact and those who have no impact on their quality of life.

The highest mean PUFA was found in children with an impact quality of life of 1.00 ± 1.00. Based on the results of statistical tests, p value = 0.243 (p > 0.05) indicates that there is no significant difference in mean of PUFA between stunting children aged 11-12 years who have impact and those who have no impact on their quality of life.

DISCUSSION

One of the most common dental diseases is dental caries. Accumulating evidence indicates that dental caries negatively affects children's nutritional status and growth. An opposite theory is that undernutrition (underweight and stunting) could predispose a person to dental caries

The mean def-t and pufa were highest in the 6-7 year age group who showed very high caries status according to previous studies which showed def-t values in the stunting group of children was 8.23 and included in the very high category. Indonesian studies showed that dt and pufa were significantly associated with stunting at the age of 6-7 years. The lowest def-t value at the age of 11-12 shows that low caries status may be caused by most deciduous teeth having been changed to permanent teeth [12,23,24].

Based on age, the mean DMF-T was highest at 11-12 years of age which showed low caries status, whereas those aged 6-7 and 8-10 years showed very low caries status. A possible reason is that permanent teeth have just erupted, which means that there is little time for caries to develop in permanent teeth.

Children with untreated dental caries often suffer from a decrease in oral health-related quality of life (OHRQoL) compared to children with caries-free. Dental caries has a significant negative impact on social and psychological function in children. Poor dental health has a significant impact on growth, as well as children's cognitive development in the long term by interfering with nutrition and producing low weight and height in their age [17].

Child Perceptions Questionnaires (CPQ) were used in this study to assess the quality of life of children aged 8-12 years. No quality of life was assessed at the age of 6-7 in this study, because CPQ 6-7 has not developed yet [22].

Outcome of the clinical examination in the stunting children in Enrekang District, the mean def-t and pufa were higher in children with an impact on quality of life. Based on the results of statistical tests, p value < 0.05 indicates that there are significant differences in def-t and pufa between stunting children aged 8-10 years who have impact and those who have no impact on their quality of life. This shows that poor oral health is an important factor that can negatively impact the quality of life of children and affect daily activities such as school and learning. This study is consistent with previous studies in Brazil which showed that children with untreated dental caries had a negative impact on quality of life related to their oral health than those who did not have dental caries [25].

The mean of DMF-T and PUFA values is higher in children with quality of life that does not have an impact. Based on the results of statistical tests of DMF-T and PUFA values with the quality of life of children, each value of p = 0.05 and 0.295 shows that there is no significant difference in DMF-T and PUFA between stunting children aged 8-10 years who have impact and those who have no impact on their quality of life. This is likely that at the age of 8-10 years permanent teeth have just erupted so that the time for developing caries in permanent teeth is short and also permanent teeth have not completely erupted. [12,24]

In the study sample of the 11-12 year age group, mean def-t and pufa were higher in children with quality of life who have no impact. While the mean DMF-T and PUFA is higher in children with an impact on quality of life. Based on the results of statistical tests of def-t / DMF-T and pufa / PUFA values with the quality of life of children in the 11-12 age group, the value of p > 0.05 indicates that there are no significant differences in def-t / DMF-T and pufa / PUFA stunting children aged 11-12 years who have impact and those who have no impact on their quality of life. This may be due to the low prevalence of caries and caries status in the 11-12 year age group. This study is in accordance with previous studies, which showed that the presence of malocclusion and dental caries did not have a significant impact on the quality of life of Nigerian children using CPQ11-14. Other studies in the UK also could not find a relationship between DMFT and CPQ 11-14 scores. Caries severity can be reflected in the PUFA index, children with a PUFA score more than 1 are 33% more likely to have an impact in their quality of life [26-28].

CONCLUSION

There are differences in caries of primary teeth between stunting children aged 8 -10 years to their quality of life. At the age of 11-12 years there is no difference in caries to quality of life in Enrekang District.

Conflict of interests

The authors declare no conflict of interest

Ethics Approval

Permission was approved from Faculty of Dentistry, Ethics and Research Advisory Committee, Hasanuddin University.

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Authors' contributions

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