

## Analysis of Health Literacy with Dental Caries and Stunting in Toddlers in Jambi City in 2023

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### Abstract

**Background:** Dental caries causes children to experience loss of chewing power (impaired chewing function), affects appetite, nutritional intake and disruption of digestion and results in less than optimal growth, which ultimately will affect the child's nutritional status. A person's health status can be maintained and improved with health literacy.

**Method:** The purpose of the study was to analyze health literacy with dental caries and stunting in toddlers.

**Results:** Research found that dental caries was 55% and the incidence of stunting was 17.5% in toddlers, as well as 40.0% low literacy. There is a relationship between health literacy and dental caries status and the incidence of stunting in toddlers.

**Conclusion:** The role of maternal parenting based on high and adequate health literacy can prevent and control dental caries status and the incidence of stunting in toddlers.

**Keywords:** health literacy, dental caries, Stunting

### INTRODUCTION

Stunting in children is a form of malnutrition. Indonesia ranks first in the prevalence of stunting among the South-East Asia Regions, namely 36.4%. Nationally in 2018, the prevalence of stunting among children under five was 30.8%, while in Jambi Province it was 30.2% and Jambi City 26.22%. The prevalence of stunting over the last 10 years shows no significant changes and this shows that the problem of stunting needs to be addressed immediately. Stunting is a public health problem in almost all developing countries and is a global problem faced by many countries in the world. The impact of shortness on children can reduce intelligence, increase morbidity and mortality, reduce productivity and can be inherited (intergenerational) in adulthood, pregnant women, and at every stage in the life cycle (1–3).

Apart from the problem of stunting which can affect a child's development, dental caries is one of the dental health problems that children are prone to. Basic Health Research in 2018 shows that the main dental and oral health problem in Indonesia is the problem of

tooth loss due to caries and this tends to increase, namely in 2018 it was 57.6% compared to 2013 (25.9%) and 2007 (23.4 %). Meanwhile, Jambi Province has dental and oral health problems at 45% and only 9.53% receive treatment from medical dental personnel. The prevalence of caries in the 3-4 year age group is 81.5% and the 5-9 year age group is 92.6% and the 5 year age group according to WHO is 90.2% (3).

There is a two-way relationship between oral health and diet and nutrition. Diet and nutrition affect the health of the tissues in the mouth and oral health affects the nutrients consumed. Dental caries causes children to experience loss of chewing power (impaired chewing function), affects appetite, nutritional intake and disruption of digestion and results in less than optimal growth, which ultimately will affect the child's nutritional status (4,5).

A person's health status can be maintained and improved with health literacy. Health literacy is the extent to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others. Low health literacy can be a barrier

to accessing health information and services, use of medicines and disease prevention (6).

Research by Kang et al. (2015) found that a mother's dental health literacy skills had a significant effect on her child's dental health status. The higher the mother's literacy level, the lower the child's dental caries and cavities. Meanwhile, research by Brega et al. (2016) that parents' limited dental health literacy skills will result in their children having poor health status. Ludjen (2020) found a link between parental literacy and stunting, the role of good maternal parenting patterns based on good and adequate literacy can prevent and control stunting (7).

The incidence of stunting and dental caries in Jambi City is still high, Jambi has even been designated as a stunting locus district/city that needs to be addressed immediately, and it is hoped that the health literacy skills of parents, especially mothers, will be able to overcome this. Based on the description above, researchers are interested in conducting research on the analysis of health literacy with dental caries and stunting in toddlers in Jambi City. The aim of the research is to analyze health literacy with dental caries and stunting in toddlers in Jambi City.

## METHOD

This research is descriptive in nature with a cross sectional approach using a combination method (Mix Method) sequential explanatory model where in the first stage quantitative data collection and analysis is carried out followed by qualitative data collection and analysis. The sample size was calculated using the survey sample formula and obtained as many as 80 children. The sampling technique was carried out using stratified random sampling based on proportional allocation. Meanwhile, qualitative research informants were selected using purposive sampling. The health literacy questionnaire was prepared by adopting Deakin University of Australia's Understanding Health and Healthcare Questionnaire which has been modified and adapted to research. The health service access and health information access questionnaire was adopted

from research by Karina Samaria Santosa (2012).

This research has received an ethical statement from the Jambi Ministry of Health Polytechnic with number: LB.02.06/2/126/2023 dated 21 May 2023. Informed consent was addressed to the toddler and his mother.

## RESULTS

### 1. Sample Characteristics

The sample consisted of 50.0% men and 50% women. The majority of the sample's father's education came from high school (56.3%), as did most of the mother's education from high school (67.5%). The sample's father's occupation consists of private sector (42.5%), laborer/handyman (47.5%), trader (2.5%) and civil servant (7.5%), while most mothers are housewives (88, 8%). The proportion of each variable can be seen in table 1.

**Table 1. Distribution of Sample Characteristics in Jambi City in 2023**

Sample characteristics	f	%
<b>Toddler Gender</b>		
male	40	50,0
female	40	50,0
<b>Father's education level</b>		
Elementary school	5	6,3
Junior high school	19	23,8
Senior high school	45	56,3
College	11	13,8
<b>Father's education level</b>		
Elementary school	7	8,8
Junior high school	8	10,0
Senior high school	54	67,5
College	11	13,8
<b>Father's Job</b>		
Private	34	42,5
Laborer/handyman	38	47,5
Trader	2	2,5
Civil servants	6	7,5
<b>Mother's Job</b>		
Private	6	7,5
Civil servants	3	3,8
Housewife/not working	71	88,8
<b>Amount</b>	<b>80</b>	<b>100</b>

### 2. Dental Caries Status

Based on the results of the dental and oral examination of the sample, it was found that more than half (55.0%) of the sample had dental caries. The proportion of dental caries status in toddlers can be seen in Figure 1.

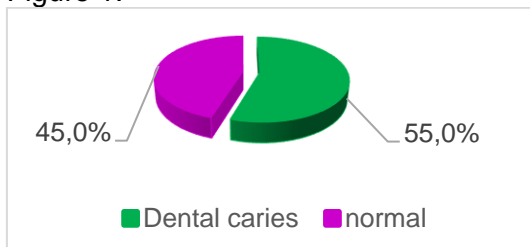


Figure 1. Status of Toddler Dental Caries in Jambi City in 2023

### 3. Incidents of Stunting in Toddlers

Stunting in children is a form of malnutrition. Stunting is failure to be tall or short, which is the impact of failure to grow in the previous period, assessed by height (TB) or Body Length (PB) according to age (U) less than -2 standard deviations (SD) from the median child growth standard (8). Samples ranged in age from 36 to 60 months. The results of the analysis showed that the average HAZ score (TB/U) for toddlers was  $-1,07 + 1,34$ . Then the scores are grouped into stunting and not stunting, the proportions in detail can be seen in Figure 2.

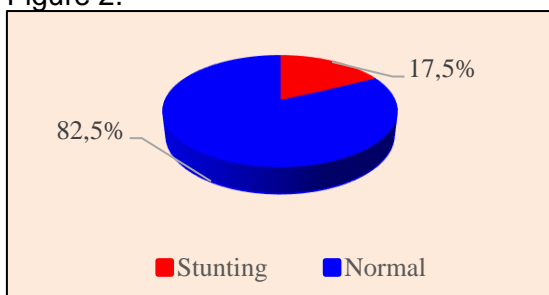


Figure 2. Stunting incidents among toddlers in Jambi City in 2023

### 4. Health Literacy, Access to Health Services and Access to Health Information

Table 2 Descriptive Distribution of Independent Variables among Toddlers in Jambi City

Variable	Mean	Median	SD	Min – Maks
Health Literacy	50,8	51,0	5,5	37 – 66
Access to Health Services	17,8	18,0	1,8	14 – 23
Access Health Information	29,6	26,5	18,4	8 - 79

The results of the analysis showed that the average health literacy score was  $50.8 \pm 5.5$ , while the average health service access score was  $17.8 \pm 1.8$ . The results of the analysis also showed that the average score for access to health information was  $29.6 \pm 18.4$ . Next, a frequency distribution was carried out for the independent variables based on the median value because the data was not normally distributed, in detail can be seen in table 3.

Tabel 3 Frequency Distribution of Independent Variables among toddlers in Jambi City

Variable	f	%
<b>Health Literacy</b>		
Low	32	40,0
High	48	60,0
<b>Access to Health Services</b>		
difficult	38	47,5
easy	42	52,5
<b>Access Health Information</b>		
Difficult	40	50,0
Easy	40	50,0
<b>Amount</b>	<b>80</b>	<b>100</b>

This research found that 40% of mothers of toddlers had low health literacy. Meanwhile, mothers' access to health services was difficult at 47.5% and health information was difficult at 50.0%.

### 5. Bivariate Analysis

The bivariate analysis in this study aims to determine the relationship between health literacy, access to health services and health information with dental

caries status and the incidence of stunting among toddlers in Jambi City, in detail which can be seen in table 4 and table 5.

**Table 4 Relationship between Independent Variables and Dental Caries Status in Toddlers in Jambi City**

Variable	dental caries status				Total		OR (95% CI)	P value
	Dental caries		Normal		f	%		
	f	%	f	%				
Health Literacy								
Low	24	75,0	8	25,0	32	100,0	4,2	0,007
High	20	41,7	28	58,3	48	100,0	(1,5 – 11,2)	
Access to Health Services							4,5	0,003
Difficult	28	73,7	10	26,3	38	100,0	(1,7 – 11,8)	
Easy	16	38,1	26	61,9	42	100,0		
Access Health Information							2,8	0,043
Difficult	27	67,5	13	32,5	40	100,0	(1,1- 6,9)	
Easy	17	42,5	23	57,5	40	100,0		
<b>Amount</b>	<b>44</b>	<b>55,0</b>	<b>36</b>	<b>45,0</b>	<b>80</b>	<b>100,0</b>		

The statistical test results obtained a p value <0.05, which means there is a relationship between health literacy, access to health services and access to health information and dental caries status. From the results of the analysis, OR=4.2, 4.5 and 2.8 were also obtained, meaning that high health literacy has a 4.2 times chance of caries-free toddlers compared to low health literacy, easy

access to health services has a 4.5 times chance for toddlers. caries-free compared to difficult access to health services, and easy access to health information has a 2.8 times chance of caries-free toddlers compared to difficult access to health information. Furthermore, the analysis of health literacy and the incidence of stunting can be seen in table 5.

**Table 5 Relationship between Dental Caries Status and Stunting Incidents in Toddlers in Jambi City**

Dental Caries Status	Stunting Incidents				Total		OR (95% CI)	P value
	Stunting		Normal		f	%		
	f	%	F	%				
Dental caries	12	27,3	32	72,7	44	100,0	6,4	0,025
Normal	2	5,6	34	94,4	36	100,0	(1,3 – 30,7)	
<b>Amount</b>	<b>14</b>	<b>17,5</b>	<b>66</b>	<b>82,5</b>	<b>80</b>	<b>100</b>		

The statistical test results obtained a p value <0.05, which means there is a relationship between dental caries and the incidence of stunting. From the results of the analysis, it was also obtained that the OR value = 6.4, meaning that caries-free status has a 6.4

chance for toddlers not to be stunted compared to dental caries.

## DISCUSSION

In this study, it was found that 17.5% of stunting occurred in toddlers. The results of this study are lower than the prevalence of stunting in Jambi City of 26.22% based on 2018 Riskesdas data and 14.0% based on 2022 SSGI data (3,9). (3,9).

Nationally in 2018, the prevalence of stunting among children under five was 30.8%, while in Jambi Province it was 30.2% and Jambi City 26.22%. The prevalence of stunting over the last 10 years shows no significant changes and this shows that the problem of stunting needs to be addressed immediately. Stunting is a public health problem in almost all developing countries and is a global problem faced by many countries in the world. (1,3).

In this study, it was found that there was a relationship between dental caries and the incidence of stunting in toddlers. There is a two-way relationship between oral health and diet and nutrition. Diet and nutrition affect the health of the tissues in the mouth and oral health affects the nutrients consumed. Dental caries causes children to experience loss of chewing power (impaired chewing function), affects appetite, nutritional intake and disruption of digestion and results in less than optimal growth, which ultimately will affect the child's nutritional status. (4,5).

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role of good maternal parenting patterns based on good and adequate literacy can prevent and control stunting (7).

## CONCLUSIONS

In this study, it was found that there was a 17.5% incidence of stunting and 55.5% of dental caries in toddlers. There is a relationship between health literacy, access to health services and access to health information and caries status in toddlers. There is a relationship between dental caries and the incidence of stunting in toddlers.

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