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RELATIONSHIP OF SANITATION AND SOCIO ECONOMIC STATUS OF PARENTS TO CARIES SEVERITY

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ABSTRACT

Background: *Riskedas stated the prevalence of caries in children aged 5-9 years in Indonesia in 2018 was 92.6%. External caries factors consist of environment, behavior, health services, and heredity. The physical environment is one of the health environments that contributes the most to health status, including dental and oral health. Sanitation with the Community-Based Total Sanitation (STBM) program is part of the physical environment. The STBM pillars consist of: stopping open defecation, washing hands with soap, drinking water and food management, waste management, and liquid waste management. Behavioral predisposing factors include parents' socioeconomic status which is determined by education, occupation, and income. Socioeconomic status affects the ability of parents to care for their children's teeth. Purpose: To analyze the relationship between sanitation and socioeconomic status of parents on the severity of caries in kindergarten children. Methods: This research is an analytic observational study with a cross-sectional method. The respondents of this study were 49 children of TK Al Hidayah in Mandiangin Barat Village, Banjar Regency, South Kalimantan Province. Data collection includes questionnaires and the def-t assessment sheet. Results: Spearman correlation test $p=0.435$ showed no relationship between sanitation and caries severity. Spearman correlation test $p=0.0001$ showed that there was a relationship between the socioeconomic status of parents and the severity of caries. The correlation coefficient -0.519 indicates a medium strength relationship in the opposite direction. Conclusion: There is no relationship between sanitation and caries severity. There is a relationship between the socioeconomic status of parents with the severity of caries.*

Keywords: *def-t index, Socio-economic, STBM.*

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INTRODUCTION

The biggest and most common dental and oral health problem is caries. Part of the dental and oral health status related to the occurrence of caries is influenced by internal factors and external factors. Internal factors according to Keyes and Newbrun consist of host, substrate, microorganism, and time. HL Bloom's external factors that indirectly influence the occurrence of caries are environment, behavior, health services, and heredity.¹

The health environment has the largest contribution to health status in the categories of physical, biological, social, cultural, economic, and political environments.² The physical environment includes sanitation.³ The sanitation in this study is Community-Based Total

Sanitation (STBM). STBM is the empowerment of hygiene and sanitation behavior through triggering 5 pillars, namely stopping open defecation, washing hands with soap, managing drinking water and food safely, managing waste safely, and managing liquid waste safely.⁴ Research Junior *et al* (2020) reported that inadequate liquid waste disposal systems contributed to the high prevalence of caries in children aged 5 years.⁵

Based on the Health Profile of South Kalimantan in 2020, the Banjar Regency area has drinking water facilities that are eligible for health requirements of 71.6%, families with access to proper sanitation are 82.2%, and the percentage of villages that have implemented STBM is 76.6% .⁶

Another factor that also has a major influence on health status is behavior. Behavior is determined by predisposing factors, supporting factors, and driving factors. Predisposing factors include age, knowledge, education, occupation, income, beliefs, sociodemography, and attitudes.²

The socioeconomic status of parents is determined by their education, occupation, and income.⁷ Research by Mustika *et al* (2014) at TK Merah Mandiangin Martapura reported that the def-t index of children there was 5.8 with children from low socioeconomic backgrounds tend to have a higher def-t index than children from middle to higher socioeconomic background because of the influence of parents' income levels in caring for their children.⁸

The prevalence of dental caries in Indonesia based on the 2013 Riskesdas is 72.3% and an increase is seen when compared to the 2018 Riskesdas data which shows the prevalence of dental caries at 88.8%.^{9,10} The prevalence of caries in children aged 5-9 years in Indonesia in 2018 was 92.6% with an average def-t index in the primary teeth of children aged 5 years of 8.1.¹⁰ Provinces of South Kalimantan were reported to have a prevalence of tooth decay, cavities, and pain in children aged 5-9 in 2018 of 56.17%.¹¹

TK Al Hidayah is the only kindergarten in Mandiangin Barat Village, Karang Intan District, Banjar Regency, South Kalimantan Province. Mandiangin Barat Village has 48 drinking water facilities and all communities have access to proper healthy latrines. Most of the people of Mandiangin Barat Village work as farmers. The villagers had to go to the Karang Intan 2 Community Health Center in Sungai Alang Village to access dental health services because there was no public health center in Mandiangin Barat Village and there had never been any counseling about dental health there. A preliminary study of the height based on the age of children in TK Al Hidayah showed that there were no children who were included in the stunting category.¹² This study aims to analyze the relationship between sanitation and the socioeconomic status of parents on the severity of caries in children at TK Al Hidayah, Mandiangin Barat Village, Karang Intan District, Banjar Regency.

RESEARCH METHODS

This research was conducted after obtaining ethical approval from the Ethical Committee of the Dentistry Faculty, Universitas Lambung Mangkurat with No. 057/KEPKG-FKGULM/EC/V/2022. This research is an

analytic observational study with a cross-sectional which was held at TK Al Hidayah, Mandiangin Barat Village, Karang Intan District, Banjar Regency. The research respondents were 49 TK Al Hidayah children aged 5-6 years who were calculated using the total sampling technique.

The tools and materials used in the study were mobile phones, stationery, informed consent, STBM questionnaire, socioeconomic status questionnaire for parents, disposable diagnostic sets, flashlights, PPE hazmat, N95 masks, face shields, goggles, handsoons, safety boxes, alcohol, 70%, bayclin, hand sanitizer, and tissue. The use of level 3 PPE aims to prevent the spread of Covid-19.

The data of this study were obtained from the STBM questionnaire, the parents' socioeconomic status questionnaire, and the def-t sheet on the results of the dental examination of children at TK Al Hidayah. The data were then entered into the processing table and analyzed using the Spearman correlation test through the SPSS application to determine the relationship between sanitation and the socioeconomic status of parents and the severity of caries in children at TK Al Hidayah.

RESULTS

Univariate Analysis

Table 1. Frequency distribution of community-based total sanitation in Mandiangin Barat Village

STBM	Total	Percentage
Do not eligible for health requirements	47	96%
Eligible for health requirements	2	4%
Total	49	100%

Based on table 1, it is known that most respondents do not eligible for STBM requirements as many as 47 people (96%).

Table 2. Frequency distribution of the socioeconomic status of parents of TK Al Hidayah children

Socio-Economic Status	Total	Percentage
Lower	30	61%
Medium	17	35%
Upper	2	4%
Total	49	100%

Based on table 2, it is known that parents of kindergarten children in TK Al Hidayah have

the most socioeconomic status in the lower category as many as 30 people (61%).

Table 3 shows that most TK Al Hidayah children have a very high def-t index as many as 39 people (80%).

Table 3. The severity of caries in children.

Caries Severity Level	Total	Percentage
Very Low	1	2%
Low	1	2%
Medium	5	10%
High	3	6%
Very High	39	80%
Total	49	100%

Bivariate Analysis

Table 4. Correlation Test Results between Community-Based Total Sanitation and Caries Severity of Children in TK Al Hidayah

		Child Caries Severity Level					r score	p value
		Very Low	Low	Medium	High	Very High		
Community-Based Total Sanitation	Does not eligible for health requirements	1 (2%)	2 (4.1%)	4 (8.2%)	2 (4.1%)	38 (77.6%)	-0.114	0.435
	Eligible for health	0	0	0	1 (2%)	1 (2%)		
	Total	1 (2%)	2 (4.1%)	4 (8.2%)	3 (6.1%)	39 (79.6%)		

Table 4 shows the results of the Spearman test correlation with p value 0.435 ($p > 0.05$), shows there is no significant relationship between community-based total sanitation

(STBM) and the severity of caries in children at TK Al Hidayah, Mandiangin Barat Village, Karang Intan District, Banjar Regency.

Table 5. Correlation Test Results between Parents' Socio-Economic Status and Children's Caries Severity Level

		Children's Caries Severity Level					r score	p value
		Very Low	Low	Medium	High	Very High		
Socio-Economic Status	Lower	0	0	1 (2%)	0	29 (59.2%)	-0.519	0.0001
	Medium	1 (2%)	2 (4.1%)	3 (6.1%)	2 (4.1%)	9 (18.4%)		
	Upper	0	0	0	1 (2%)	2 (4.1%)		
	Total	1 (2%)	2 (4.1%)	4 (8.2%)	3 (6.1%)	39 (79.6%)		

in TK Al Hidayah

Table 5 shows the results of the correlation test Spearman with p value 0.0001 ($p < 0.05$), which means that there is a significant relationship between the socioeconomic status of parents and the severity of caries in children at TK Al Hidayah, Mandiangin Barat Village,

Karang Intan District, Banjar Regency. The correlation coefficient value shows -0.519 which means the correlation has medium strength and the direction of the correlation between the two variables is opposite.

DISCUSSION

The results of this study based on community-based total sanitation (STBM) in table 1 shows that the majority of respondents are in the category of not eligible for health requirements as many as 47 people (96%). This is because most of the respondents do not manage their toddler's feces safely, everyone in their house does not always use family latrine facilities, there are still respondents who dispose of their waste in a way that does not eligible for health requirements, and the liquid waste management facilities are inadequate. Most of the respondents still throw their toddler's feces together with their diapers into the trash or wash their toddlers in a place other than the latrine. Respondents who did not always use family latrine facilities stated that the reason was because the distance between their place of work and their home was quite far, so they chose to defecate in the nearest place. Respondents whose waste management did not eligible for health requirements stated that they chose to burn their waste so as not to pay waste management fees to TPS officers. Some respondents also disposed of liquid waste from bathrooms and kitchens into open reservoirs, rivers, or directly to the ground.

The results of this study are in line with the research of Syarifuddin *et al* (2017) in Banjar Regency which reported that 20 (55.6%) of the 36 STBM program villages still had a low frequency of access to family latrines. The cause of the practice of open defecation is influenced by habitual factors that consider it more practical because there is no need to clean dirt.¹³

The results of this study based on table 2 show that the parents of TK Al Hidayah children have lower socioeconomic status as many as 30 people (61%). The socioeconomic status of parents is determined by their level of education, occupation, and income of the parents.⁷ Parents with lower socioeconomic status mostly graduated from basic education, had a low-status job, and the monthly income level was very low. Parents of TK Al Hidayah children belonging to the category of middle socioeconomic status as many as 17 people (35%) with most of the parents completing secondary education, having low to moderate status jobs, and the range of income levels per month ranges from very low to high. low. Parents of TK Al Hidayah children belonging to the upper socioeconomic status category are 2 people (4%) with parents graduating from secondary to high education, having medium to

high status jobs, and income ranges per month from moderate to very high.

The results of the socio-economic status of this study are in line with the research of Firdaus *et al* (2018) which states that most of the West Mandiangin people have jobs as farmers because the West Mandiangin village has abundant agricultural land resources, both sedentary agriculture (rice fields), rubber plantations, and fruit orchards. The highest income of the Mandiangin community ranges from Rp1,500,000.00 to Rp. 2,000,000.00.¹⁴

The results of the def-t index examination on the primary teeth used to measure the severity of caries in TK Al Hidayah children, Mandiangin Barat Village, Karang Intan District, Banjar Regency, based on their components, showed as many as 500 teeth included in the category d (decayed), 13 teeth included in category e. (extraction), and 4 teeth included in category f (filled). The total def-t index of TK Al Hidayah children in Mandiangin Barat Village, Karang Intan District, Banjar Regency as a whole is 10.5 which is in the very high category. Primary teeth are more susceptible to caries because the enamel and dentin layers are thinner, the pulp chamber is larger, and the pulp horn is higher than that of permanent teeth. The thickness of the enamel layer of primary teeth is only half the thickness of permanent tooth enamel and the mineral content of primary tooth enamel is less than that of permanent teeth. Caries in primary teeth will develop faster to affect several teeth at once and cause children to complain of annoying pain.¹⁵ The results of this study are in line with research by Mustika *et al* (2014) which reported that the def-t index of children in TK Merah Mandiangin Martapura was 5.8 with a high category.⁸

The results of the correlation analysis between STBM and the caries severity of children in TK Al Hidayah in table 4 show that there is no significant relationship between STBM and caries severity in children at TK Al Hidayah, Mandiangin Barat Village, Karang Intan District, Banjar Regency. This happens because STBM is related to caries through stunting. Environmental sanitation is one of the factors that affect nutritional status. Malnutrition and infection stem from poverty and an unhealthy environment with poor sanitation.¹⁶ Stunting or short nutritional status is a condition when a person's height does not match his age.¹⁷ Primary dental caries in stunted children tends to be more severe due to delayed eruption of permanent teeth and salivary gland

atrophy which results in a decrease in salivary secretion as a buffer and self-cleansing.¹⁸

A preliminary study at TK Al Hidayah reported that no child was stunted.¹² This means that the STBM condition in West Mandiangin Village is not significant enough to cause stunting so there is no significant relationship between STBM and the severity of caries in children. Firdaus' research (2018) also reports that there is already an Integrated Service Post in Mandiangin Barat Village, Karang Intan District, Banjar Regency which is intended for pregnant women and babies under five years of age in terms of controlling health conditions related to weight and nutrition.¹⁴ The results of this study are not in line with the study by Junior *et al* (2020) in Brazil which reported that the prevalence of caries in children aged 5 years had a significant relationship with sanitation and living conditions through the influence of aspects of the city of origin, water supply system, and sewage system. liquid.⁵

The results of the correlation analysis of the socioeconomic status of parents in table 5 show that there is a significant relationship between socioeconomic status and the severity of caries, which means that the higher the socioeconomic status of the parents, the lower the severity of caries. The results of this descriptive study show that children from parents with lower socioeconomic status have a def-t index of 12,2 in the very high category, children from parents with middle socioeconomic status have a def-t index of 18,4 in the very high category, and children of parents with upper socioeconomic status have a def-t index of 7 with a very high category. This happens because there are behavioral factors in the surrounding area of the study which cause children with parents with high socioeconomic status to still have a very high def-t index and the distribution of respondents based on socioeconomic status in this study is uneven.

The results of this study are in line with data from Riskesdas of South Kalimantan Province in 2018 which reported 94.9% of children aged 5-9 years brushing their teeth every day but only 2.91% of children brushing their teeth correctly. Residents in Banjar Regency who brush their teeth every day are reported as 96.98% but only 5.92% of those who brush their teeth correctly. The data illustrates that the behavior of brushing teeth properly and correctly is still not carried out by residents around the location of this study. The Riskesdas of South Kalimantan Province in 2018 also reported that there were 56.17% of children aged 5-9 years who had damaged,

cavities, or sick teeth but only 9.59% of children received dental care counseling, 3.9% of children who received filling treatment, and 19.62% of children who received tooth extraction. The population in Banjar Regency who received dental counseling was reported as 9.31%, who received filling treatment by 8.01%, and 8.27% who extracted teeth. The data illustrates that there are still many children with carious teeth who are left without treatment until their condition is so severe that it can no longer be maintained than children with carious teeth who receive treatment so that caries can be prevented from spreading.¹⁰

The results of this study are also in line with research by Fithriyana (2021) which reported that there was a relationship between the socioeconomic status of parents and the incidence of caries in primary teeth in children aged 4-5 years in Kuok Village because socioeconomic status affects a person's healthy lifestyle and ability to meet health needs. ¹⁹ Ulfah's research (2020) also states that there is a relationship between parental behavior and dental caries in kindergarten children. The behavior of parents who ignore dental and oral health will have an impact on the high prevalence of caries in the oral cavity of their children because children are still dependent on their parents in terms of maintaining dental health.²⁰ Based on the results of this study, it can be concluded that there is no relationship between sanitation and the caries severity of children in TK Al Hidayah and there is a relationship between the socioeconomic status of parents and the caries severity of children in TK Al Hidayah.

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