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The Relationship between Dental Caries and Oral Hygiene of Children 7-12 Years Old at SDN BaletbaruJember

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ABSTRACT

Dental caries is the most common dental and oral health problem experienced by school-age children aged 7-12 years. Dental and oral care behavior is essential in determining individual health status, especially oral health and the level of dental caries. Since the pandemic, SDN Baletbaru never provided counseling and assistance in maintaining oral health. However, since the pandemic, there has never been any assistance regarding dental and oral health maintenance. Based on this, the researchers wanted to examine the relationship between dental caries and the level of oral hygiene of children aged 7-12 years at SDN Baletbaru Jember. This descriptive research was carried out on the students of SDN Baletbaru, Jember Regency, aged 7-12 years. This research was conducted by examining OHI-s, DMF-T, and def-t. The results showed a relationship between oral hygiene, age, sex, and dental caries ($R > 0.5$). In conclusion, there was a relationship between dental caries and the level of oral hygiene of children aged 7-12 years at SDN Baletbaru. Therefore, improving oral hygiene is necessary to promote and prevent dental caries. In order to make this effort a success, coordination and cooperation from all parties are needed, namely the students themselves, parents, teachers, and health workers

Keyword :children 7-12 years old dental caries, oral hygiene

Introduction

Dental caries is the most common dental and oral health problem experienced by school-age children aged 7-12 years. Riskesdas 2018 showed caries prevalence in school-age children was high, above 70% [1]. The serious problem of dental caries in children relates to the inadequate respect of children in controlling the factors that cause dental caries. The main factors causing dental caries that occur in children are oral microorganisms, daily diet, and oral hygiene [2].

Behaviors is all activities carried out by individuals (someone), which can be observed (seen) directly or indirectly. Knowledge, attitude, and practice are essential factors relating to behaviors [3]. Dental caries is a chronic disease in which progressivity takes a long time and relates to behaviors. Children's habit of consuming snacks supported by poor hygiene triggers substrate accumulation, which is fermented by

cariogenic bacteria and eventually leads to demineralization and dental caries [4].

Dental and oral care behaviors is crucial in determining individual health status, especially oral health and incidence of dental caries. There are two main indicators determining successful of personal oral health care in children, oral hygiene and the experience of dental caries [5]. Oral health is closely related to dental and oral hygiene; the oral cavity is clean if there is no plaque and calculus. Indicators of oral hygiene use the Oral Hygiene Index Simplified (OHI-s), an index of plaque and calculus assessment [6]. Meanwhile, the experience of dental caries was assessed based on the DMF-T (Decay Missing Filled Teeth) index for permanent teeth and def-t (Decay Exfoliated Filled Teeth) for primary teeth. D (decay) is the number of cavities due to dental caries; M (missing/exfoliated) is the number of extracted teeth due to dental caries; F (filled) is the number of the filled teeth to caries [7].

SDN Baletbaru is located in Baletbaru Village, Sukowono District, Jember Regency. In 2013, the prevalence of caries was very high, and since that year, there has been counselling and assistance in maintaining oral health. However, since the pandemic, there has never been any assistance regarding dental and oral health maintenance. Based on this, the researcher wanted to examine the relationship between dental caries and the level of oral hygiene of children aged 7-12 years at SDN BaletbaruJember.

Methods

This study was descriptive and carried out on SDN Baletbaru, Jember Regency students aged 7-12 years. The first observation was oral hygiene examination using OHI-s, which involved four surfaces of four teeth. the surfaces were buccal or facial surfaces

of the right upper first molar, right upper first incisor, left upper first molar and left lower first incisor, and lingual surface of the right and left lower first molars. OHI-s consisted of scores of DI-S (Debris Index Simplified) and CI-S (Calculus Index Simplified). OHI-s score is the summation of the DI-S and CI-S, then the score was classified into 0.0-0.1 (good), 1.3-3.0 (moderate) and 3.1-6.0 (poor) [8].

The DMF-T presented the dental caries index of adults calculated based on dental caries experiences. DMF-T index (individual) was the total number of D + M+ F; therefore, DMF-T index (population) was the total number of D+M+F/total number of samples examined [7]. The def-t index presented dental caries of deciduous teeth. The examination was similar to DMF-t [9].The data were analyzed by descriptive analysis and pearson's correlation test.

Results and Discussion

Table 1.
Descriptive of Respondents (n=140)

Age (years)	Sex		Total
	Male	Female	
7-8	23	22	45
9-10	24	27	51
11-12	21	23	44
Total	68	72	140

Table 2.
Dental Caries and Oral Hygiene Index Based on Age (n=140)

Age (years)	n	DMFT-t	def-t	OHI-s
7-8	45	0,89	4,37	2,7
9-10	51	3,12	2,78	3,2
11-12	44	4,56	0,14	3,5

Table 3.
Oral Hygiene Respondent' Based on Gender (n=140)

	Male		Female		Total	
	F	%	F	%	F	%
Good	3	4,35	4	5,64	7	5,00
Moderate	29	42,01	32	45,06	61	43,57
Poor	37	53,64	35	49,3	72	51,43
Total	69	100	71	100	140	100

Table 4.
Correlation Analysis

	Age	Gender	Oral Hygiene
Oral Hygiene	R= -0.763 P = 0.000	R= 0.346 P = 0.003	-
Dental caries	R= 0.507 P = 0.000	R= 0.250 P = 0.007	R= 0.837 P = 0.000

Table 1 showed the distribution of respondents based on gender and age. Based on gender, female respondents (n=72) were more than male respondents (n=69). Meanwhile, based on age, respondents aged 9-10 years (n=51 people) were more than other age groups. Moreover, almost all groups have more female respondents than males, except in the 7-8 age group (men = 23; women = 22).

Table 2 showed that the caries incidence and oral hygiene of the respondents were based on the caries index (DMF-t and def-t) and the oral hygiene index (OHI-s). Based on age group, respondents in the age group 11-12 years had the highest DMF-t index (4.56) and the lowest def-t (0.14), while the age group 7-8 years showed the highest def-t index and DMF-t lowest among the other groups. This index indicated that the caries rate of permanent teeth in the 11-12 year age group was in the moderate category, while the caries index for primary teeth was mild. The caries index range was 2.7-4.4. The caries index of permanent teeth in this group was the highest among the other groups because there might be more permanent teeth in this group than in the other groups, and they had a more extended caries experience than other age groups. Meanwhile, the caries index of the deciduous teeth in this group was the lowest because the number of primary teeth in this group was the least compared to other groups due to being replaced by permanent teeth. Contrary to the 11-12 year age group, the dental caries index of deciduous teeth in the 7-8 year age group was the highest, while the dental caries index of permanent teeth was the lowest. Permanent teeth might have just started to grow in this group, whereas deciduous teeth were still abundant in the oral cavity and the caries experience was high. Age 7-8 years is the final tooth phase of primary teeth, where permanent teeth have started to grow to replace primary teeth, while age 11-12 is the final tooth replacement phase, where permanent teeth have replaced many deciduous teeth. Only a few primary teeth are left. [10].

Table 2 also showed the level of oral hygiene. The age group of 7-8 years had a level of oral hygiene that was cleaner than other groups. The level of oral hygiene in the 7-8 year age group was in the moderate category, while the 9-10 and 11-12 year age groups were in the poor. The difference in oral hygiene among the group might be caused by respondents aged 9-12 years not paying attention to oral hygiene and the reduced role of parents in controlling respondents to maintain oral hygiene. With increasing age, the role of parents in controlling their children's dental health decreases. Children aged ten years old have started not wanting to be controlled for their hygiene and are starting to be busy socializing. On the other hand, parents have started not to supervise because they have considered the age of 10 years and over, and the child has started to grow up and be independent [11].

Table 3 showed the level of oral hygiene by gender. More than 50% of respondents presented a poor

level of hygiene, especially male respondents (53.64%). Female respondents indicated better oral hygiene than males, probably due to women paying more attention to personal hygiene than males. Psychologically, women want to look cleaner and more beautiful, and women's maturity development is faster than males [12].

Table 4 showed a relationship between oral hygiene, age, sex and dental caries. Age has a strong negative relationship with the level of oral hygiene, where the older the child, the worse the level of oral hygiene. Elementary school-age children still tend to play frequently, snack on foods that are sticky on their teeth and are inadequate in cleaning them. Those school-age children might still not care about their hygiene, especially brushing their teeth. In addition, based on this study, the calculus index of these students was very high, where the calculus of the posterior teeth had covered the occlusal area of the teeth. Thick and abundant calculus indicates that someone is inadequate in cleaning his/her teeth both in terms of frequency and the way he or brushes his/her teeth [6].

In addition, age also presented a strong relationship with the incidence of caries. The older the age, the higher the caries incidence. In children aged 6-7 years, caries experience was associated with caries in primary teeth, while in children aged eight years and over, it was associated with caries experience in permanent teeth. Dental caries does not occur in a short time but takes a long time, namely the interaction of the main factors causing dental caries [9], [13].

Table 4 also showed a weak relationship between gender and the level of cavity hygiene and dental caries. The level of oral hygiene and dental caries might be individual behavior, regardless of gender. Although women tend to care about personal hygiene, there might be male students who also care about the health of their oral cavity. Likewise, the level of dental caries, dental caries is also individual, where the main factors causing caries are the host (teeth and saliva), substrate (food), caries-causing microorganisms and time [2], [9].

Table 4 also showed a significant relationship between the level of oral hygiene and dental caries. By maintaining the cleanliness of the oral cavity, food debris and debris might reduce and even be lost so that microorganisms might not proliferate and metabolize because there were no substrates [14].

Dental and oral health indicators are the caries experience index (DMF-t or def-t: the experience of tooth decay, loss or filling due to caries), the periodontal disease index (CIPTN: the need for periodontal tissue care), and the oral hygiene index (OHI-s) : presence or absence of debris and calculus) [5], [15]. The high level of dental caries in school-age children in Indonesia is related to poor dental health behavior, which is the lack of student awareness of the importance of dental and oral health. Behavioral factors are one of the factors that affect a person's health status, so changing human behavior is not something easy because humans are individuals who have different personality

characteristics and socio-cultural and economic backgrounds. Likewise, for school-age children, school-age children's health care depends on the role of parents [16], [17].

This study became the basis for behavioral changes in maintaining oral and dental health supported by a positive environment. The role of parents and teachers is decisive in making behavioral changes in the maintenance of dental and oral health of school-age children, thereby reducing the prevalence of dental caries. The knowledge and education parents provide are very helpful in shaping children's behavior. Maintaining oral and dental health efforts includes brushing teeth and gargling with a fluoride solution [8], [18].

In conclusion, there was a relationship between dental caries and the level of oral hygiene of children aged 7-12 years at SDN Balletbaru. Therefore, improving oral hygiene is necessary to promote and prevent dental caries. In order to make this effort a success, coordination and cooperation from all parties are needed, namely the students themselves, parents, teachers and health workers.

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