LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH NASIONAL

Judul Jurnal Ilmiah (Artikel)	:	Risk Factor of New Caries Based on Child Dental Caries Predictor Approach
Nama Penulis	:	**Quroti A'yun,** Julita Hendrartini, Supartinah Santoso, Diyah Fatmasari
Jumlah penulis	:	4 (empat) orang
Status Pengusul	:	Penulis Ke 1
Identitas Jurnal Ilmiah	:	a. Nama Jurnal : Dentika Dental Journal b. Nomor ISSN: e-ISSN: 2615-854X, p-ISSN:1693-671X c. Volume, Nomor, bulan, tahun : Vol 18,No 2,Desember 2014 d. Penerbit : FKG USU e. DOI artikel : ..... f. Alamat web/repositori Jurnal : https://talenta.usu.ac.id/dentika
Kategori Publikasi Jurnal Ilmiah	:	☐ Jurnal Nasional Terakreditasi (peringkat 1 dan 2)
		☑ Jurnal Nasional Bahasa Inggris terindeks (peringkat 3 dan 4)
(beri ✓pada kategori yang tepat)		☐ Jurnal Nasional Bahasa Indonesia terindeks (peringkat 5 dan 6)
		☐ Jurnal Nasional (diluar peringkat 1-6)

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah				
	Nasional Terakreditasi peringkat (1 dan 2)	Nasional Bahasa Inggris peringkat (3 dan 4)	Nasional Bahasa Indonesia peringkat (5 dan 6)	Nasional diluar peringkat (1-6)	Nilai Akhir yang Diperoleh
	Nilai Maks: 25	Nilai Maks: 20	Nilai Maks: 15	Nilai Maks: 10	
a. Kelengkapan unsur isi jurnal ilmiah (10%)		2			2
b. Ruang lingkup dan kedalaman pembahasan (30%)		6			5,5
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)		6			5,5
d. Kelengkapan unsur dan kualitas terbitan (30%)		6			6
Total = (100%)					19
Nilai Pengusul = 60 % x 19 = 11,4.					

Yogyakarta, 11 Oktober 2021
Reviewer

Nama :Dr.drg. Wiworo Haryani, MKes
NIP/NIDN: 196707191993032001/4019076702
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Jabatan Fungsional: Lektor kepala
Bidang Ilmu : kesehatan gigi

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Catatan Peer Reviewer :

1. Tentang Kelengkapan Unsur isi
   Isi lengkap yang terdiri atas abstrak, Introduction, Material & Methode dan discussion sesuai dengan templete penulisan manuscribe.

2. Ruang lingkup dan kedalaman pembahasan
   Penulisan cukup lengkap dengan masalah penelitian yang relevan.

3. Kecukupan dan Kemutakhiran data / informasi dan metodologi
   Hasil dan data penelitian ditulis lengkap yang ta: karakteristik sample, Distribusi gigi dan mulut, distribusi fakor risiko anak, distribusi faktor risiko ibu dan faktor risiko karies.

4. Kelengkapan unsur dan kualitas terbitan
   Penerbit USU, FKG yang terdiri atas dewan Editor yang kompeten dan mitra bertari dari Chiversitas negeri dan luar negeri.

Yogyakarta, 1 Oktober 2021
Reviewer 1

Nama :Dr.drg. Wiworo Haryani, MKes
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Bidang Ilmu : kesehatan gigi

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		☐ Jurnal Nasional (diluar peringkat 1-6)

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah				
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	Nilai Maks: 25	**Nilai Maks: 20**	**Nilai Maks: 15**	**Nilai Maks: 10**	
a. Kelengkapan unsur isi jurnal ilmiah (10%)		2			2
b. Ruang lingkup dan kedalaman pembahasan (30%)		6			5,5
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)		6			5
d. Kelengkapan unsur dan kualitas terbitan (30%)		6			6
Total = (100%)					18,5
Nilai Pengusul = 60 % x 18,5 = 11,1					

Semarang, Oktober '21
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NIP	:	196406041992032002
Unit Kerja	:	Poltekkes Kemenkes Semarang
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Bidang Ilmu	:	Kesehatan Gigi

Judul Jurnal Ilmiah (Artikel)	:	Risk Factor of New Caries Based on Child Dental Caries Predictor Approach
Nama Penulis	:	Quroti A'yun
Jumlah penulis	:	4 (empat) orang
Status Pengusul	:	Penulis Ke 1

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1. Tentang Kelengkapan Unsur isi

Jurnal Dentin ini lengkap dan konsisten dalam penyelesaian.

2. Ruang lingkup dan kedalaman pembahasan

Pembahasan cukup baik dapat menjadi penelitian yang relevan.

3. Kecukupan dan Kemutakhiran data / informasi dan metodologi

Data yang ditulis kurang lengkap

4. Kelengkapan unsur dan kualitas terbitan

Penerbit adl USU Medan, Univ ternama di Sumatera.

Semarang, Oktober 21
Reviewer 2,

Nama	:	Dr. drg Lanny Sunarjo, MDSc
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RISK FACTORS OF NEW CARIES BASED ON CHILD DENTAL CARIES PREDICTOR APPROACH

by Quroti A'yun, Julita Hendrartini Supartinah Santoso, Diyah Fatmasari

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RISK FACTORS OF NEW CARIES BASED ON CHILD DENTAL CARIES PREDICTOR APPROACH

(FAKTOR RESIKO KARIES BARU BERDASARKAN PENDEKATAN PREDIKTOR KARIES GIGI ANAK)

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Abstract

Caries risk factors are factors relate to caries occurrence in individual or population. Caries risk factors vary in every individual. A new method to discover the relation between risk factors and caries in children is a software named child dental caries predictor This research aimed to know the general overview of the order of caries risk factor in elementary school students in the province of Daerah Istimewa Yogyakarta. This was an observational research with cross-sectional design. The subjects were 430 children, ranging from 10 to 12 years of age. Caries risk factors that were assessed through child dental caries predictor were oral and dental condition, mothers and children's behavior in maintaining dental health, and school environment. The research result showed that the percentage for each risk factor was 39.74% for oral and dental condition, 35.77% for children's behavior in maintaining dental health, 15.90% for mothers' behavior in maintaining child's dental health, and 7.95% for school environment. In conclusion, the order of children caries risk factors through measurement using child dental caries predictor are oral and dental condition, children's behavior in maintaining dental health, mothers' behavior maintaining child's dental health,, and school environment.

Key words: risk factor, caries, child caries predictor

Abstrak

Faktor risiko karies adalah faktor yang berhubungan dengaan terjadinya karies pada individu dan populasi. Faktor risiko terjadinya karies pada setiap individu tidak sama. Salah satu alat untuk mengetahui hubungan antara faktor-faktor risiko dengan karies pada anak adalah prediktor karies gigi Anak. Penelitian ini adalah untuk mendapatkan gambaran urutan faktor risiko karies pada anak SD di wilayah Propinsi Daerah Istimewa Yogyakarta. Jenis penelitian ini adalah observasional dengan rancangan *cross-sectional*. Sampel sebanyak 430 anak berumur 10-12 tahun. Faktor risiko karies yang diukur menggunakan program prediktor karies gigi anak adalah keadaaan gigi dan mulut, perilaku anak dan ibu dalam pemeliharaan kesehatan gigi, dan lingkungan sekolah. Hasil penelitian menunjukkan bahwa persentase faktor risiko keadaan gigi dan mulut adalah 39,74%, perilaku anak dalam pemeliharaan kesehatan gigi 35,77%, perilaku ibu dalam memilih makanan anak 15,90%, dan lingkungan sekolah 7,95%. Sebagai kesimpulan, urutan faktor risiko karies anak dengan pengukuran menggunakan prediktor karies gigi anak adalah kondisi gigi dan mulut, perilaku anak dalam pemeliharaan kesehatan gigi, perilaku ibu dalam memelihara kesehatan gigi anak, dan lingkungan sekolah.

Kata kunci: faktor risiko, karies, prediktor karies gigi anak

INTRODUCTION

Dental caries is one of dental and oral conditions in children with a relatively high prevalence rate. Despites a number of prevention efforts, the outcome is still unsatisfactory.[1] Riset Kesehatan Dasar (Riskesdas) conducted by the Ministry of Health in 2013 showed that the DMFT index in 12-year-old

group reaches 1.4. The same research also showed that the older the age, the higher the DMFT index.[2] Based on this result, dental caries prevention efforts need to start at an early age.

Dental caries is a disease, mostly caused by poor dental care which affects the growth and development.[3] Dental caries attacks dental hard tissue, email, dentin, and cementum. The sign of caries is the demineralization of the organic dental part, followed by decay of organic matters. Demineralization occurs because of acid produced by the fermentation of carbohydrate by microorganism. Caries will occur when interaction factors between oral and dental condition happen. These factors include the host, microorganism, substrate, and time.[4] In addition to oral and dental condition factor, children and mothers behavior in maintaining children's dental health and school environment also have part to influence caries occurrence.[5]

Previous study has successfully put together software for child dental caries predictor based on the result of the research on elementary school students in the Yogyakarta region. The previous study showed that out of 11 child caries risk factors, there were nine significant factors: pH saliva, the amount of plaque, caries experience, dental health care, mothers' behavior in selecting a child's diet, children's knowledge about dental health, children's behavior in maintaining dental health, children's behavior in selecting food, and the practice of UKGS by teachers.[6] This software has been tested, and the results showed that this method has a high sensitivity and specificity.[7] Child dental caries predictor is a new method to describe the interaction of various factors that plays a role in the caries process. Child dental caries predictor was developed to gain a better understanding about the multi-factor aspects of dental caries in children and as a guide in predicting the risk of new caries.

The aim of study was conducted to get an overview of the order of the risk factors for new caries using child dental caries predictor approach in 10-12 years old children in the province of Yogyakarta. Figuring out the order of new caries risk factor can act as guidance in planning the prevention of new caries.[8]

MATERIALS AND METHODS

This research was an observational research with cross-sectional design. The population of the research was elementary school students in the province of DIY. The research was conducted after receiving ethical clearance from Commission on Ethics and Advocacy Faculty of Dentistry University of Gadjah Mada, and written consent from the parents after receiving informed consent.

The samples of the research were 10-12 years old children in the province of Daerah Istimewa Yogyakarta and the data was collected through stratified random sampling. The number of samples was 430 children which then subjected to one examination with child dental caries predictor.

The calculation of new caries risk factor in children through child dental caries predictor approach used the following research materials: 1) disclosing solution, 2) cotton swab to apply disclosing solution, 3) tooth brush and 4) toothpaste. The research also used the following equipments: 1) computer with child dental caries predictor software, 2) pH meter to measure saliva pH, 3) small glass to put the saliva, and 4) diagnostic tools, such as tweezers, sonde, excavator, and mouth mirror.

The research processes were: each sample was examined and the result was then inserted into child dental caries predictor. The examination involved 1) oral and dental condition which included the acidity degree (pH) of the saliva, the amount of plaque measured with PHP-M plaque index from Marten and Meskin, and caries experience measured according to def-t and DMF-T index; 2) children's behavior which included children's knowledge about oral and dental health which consisted of six question items, children's behavior in maintaining oral and dental health which consisted of four question items, and children's eating habit which consisted of five question items; 3) mothers' behavior which included the use of oral and dental care service with child dental caries predictor which consisted of one questions and the behavior in selecting a child's diet which consisted of seven question items; and 4) the school environment, measured by three question items. Data from the examination were then analyzed using child dental caries predictor software program.

RESULTS

Half respondents of this research were male (50.69%). In addition, the education level of most of the mothers and also the family income could be categorized as low, that was 57.67% and 53.95% respectively (Table 1).

The oral and dental condition was measured saliva pH and most of them (53.72%) was high. Other risk factors, such as the amount of plaque and caries experience, could also be categorized as high as 58.60% and 51.86% respectively (Table 2).

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Table 1. Sample characteristics

Characteristic	Criteria	n	%
Gender	Boy	218	50.69
	Girl	212	49.31
Mother's education	Low (Elementary school and Junior high school)	248	57.67
	Moderate (Senior high school)	94	21.86
	High (College)	90	20.93
Family income	Low (Rp. 500.000 - Rp.2.500.000)	232	53.95
	Moderate (Rp.2.600.000 - Rp.5.000.000)	94	21.86
	High (> Rp.5.000.000)	104	24.19

Table 2. Distribution of oral and dental risk factor

Risk factor	High (pH >6,5)		Low (pH≤6,5)	
	n	%	n	%
Saliva pH	231	53.72	199	46.28
Amount of plaque	252	58.60	178	41.40
Caries experience	223	51.86	207	48.14

The research showed that 52.79% of the children did not have a good knowledge about dental health. In addition, 66.28% of the children also did not have a good behavior in maintaining dental health, while 51.16% of them had a relatively bad eating habit (Table 3).

Table 3. Distribution of children's behavior risk factor

Risk factor	High		Low	
	n	%	n	%
Children's knowledge about dental health	203	47.21	227	52.79
Children's behavior in maintainence dental health	145	33.72	285	66.28
Children's behavior in choosing	210	48.84	220	51.16

Mothers behavior that were observed in this research use on dental health care service (67.67%) and selected child's diet (51.8%) could be categoryzed as poor. In terms of school environment, the majority of the sample (61.16%) agreed that the school environment was not good (Table 4).

Based on Table 5, oral and dental condition was the biggest risk factor for new caries, followed by children's behavior, mothers behavior, and school environment.

Table 4. Distribution mothers behavior risk factor

Risk factor	High		Low	
	n	%	n	%
Mothers behavior in using healthcare service	139	32,33	291	67,67
Mothers behavior in selecting food	207	48,14	223	51,86

Table 5. The risk factors of new caries

Risk factor	n	%
Oral and dental condition	171	39,74
Children's behavior	154	35,77
Mother's behavior	68	15,90
School environment	34	7,95

The overview of the caries factor with child dental caries predictor program was presented through pie chart which consisted of five part sector and risk factor criteria, which would be visible after the input of data (Figure 1).

On Figure 1, it could be seen that 99.35% have dental caries.

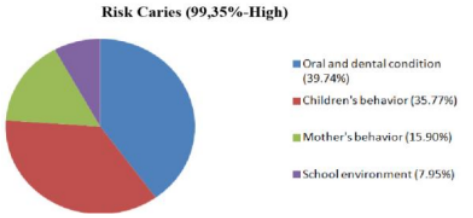

Figure 1. Caries factor with pie chart on child dental caries predictor

DISCUSSION

Based on the average percentage of new caries risks assessment using child dental caries predictor approach, the orders of the caries risk factors are 1) oral and dental condition, 2) children's behavior, 3) mothers' behavior, and 4) school environment. That was 39.74%, oral and dental condition becomes the highest risk factor in this research. This factor consisted of three assessments, saliva pH, amount of plaque, and caries experience. In this research, pH saliva was examined based on saliva pH index.[9] The amount of plaque was measured based on PHPM index from Marten and Meskin. Out of 430 subjects, most of the saliva pH could be categorized as high/base (pH> 6.5), while PHP index and caries experience were also high or bad. The high pH of saliva in this research was due to the high secretion of saliva in children, which eventually affected the

volume and also become high. Furthermore, since one of the functions of saliva was as buffer to help neutralize the pH of plaque after meal, it would eventually balance the saliva pH and reduce the risk of demineralization.[9]

The amount of plaque can affect the risk of caries because caries is deposited from bacteria and its product is formed and stick to the teeth surface. If not cleaned properly, plaque can decrease the pH of plaque. If this occurs frequently, it can cause the enamel demineralization.[10] The amount of plaque in most children is quite high because they usually consume cariogenic food and do not have a good dental care behavior.[11]

Because of 10-12 years old children are in mixed dentition period, the assessment of caries experience was based on def-t and DMF-T index. The result showed that most of the children had bad caries experience (def-t/DMF-T> 3).In childhood period, caries was not treated. This is because more bacteria are found on teeth that suffer from caries which lead to produce of more acid. In addition, teeth that suffer from caries also experience the reduction of the pH of the plaque easier compare to teeth that do not suffer from caries.[11]

The second caries risk factor in this research was children's behavior. This research assessed the children's knowledge about dental health, children's behavior regarding to dental care, and children's eating habit. Someone's knowledge is influenced by the predisposed factors, such as economic status, age, sex, and family structure. Age will influence the thinking process and ability to absorb information. As people get older, their thinking and perception will also become more developed. School-aged children have been already in the phase of thinking logically and socially, thus their way of thinking will influence their behavior.[12] Since most children do not have an adequate knowledge about dental health, they prefer to consume cariogenic food instead of vegetables and fruits.[13] Previous research showed that 90% of children consumed less than three portions vegetables and fruits per day. Vegetables and fruits that are rich in fiber and water content can help to clean food residue and stimulate mastication which eventually can increase saliva secretion and volume.[14]

This result indicated that most of the children have poor behavior regarding to health care. This was consistent with previous research that stated children with poor behavior did not brush their teeth before going to bed.[15] School-age children are actually already capable in brushing their teeth properly because their fine and gross motoric function have developed. Beside that, their physical development can also be observed from their coordination power, flexibility, as well as the balance, fluidity, ability to control, and variation of movements.[16]

Mothers behavior factors are on the third place and come from the combination of their behavior in practicing dental health care service and selecting food for their children. Due to school-age children are still reliant on their mothers, mothers have the responsibility to take their children to the dentists for routine dental check up.[17] Figure 3 showed that the use of dental care service was still low (< twice a year). This was partly because half of the mothers had low education level and came from lower income family (Table 1). Mothers' education will influence parents' ability to access information and also their understanding about the importance of oral and dental care in children. Low education level means less motivation and poorer behavior towards oral and dental care for their children.[18] Parents' awareness to use dental health care service for their children also depend on their income level.[19] This research discovered that 53.95% of the family came from lower income family which affected the number of visits to the dentists.[20] Low use of dental care service by parents can in turn lower children motivation to go to the dentists. So far children still feel discouraged to go to the dentists because they see it as a frightening experience.[18]

In terms of food selection for children, mothers' behavior could be considered as poor because most of them provided cariogenic food for their children. In addition, most mothers did not pack food for their children to school which encouraged the children to consume cariogenic food at school cafeteria.[21] The education level of the mothers will shape their knowledge and behavior in selecting diet for their children. Mothers with low education level tend to serve their children's favorite food regardless of its effect to their children's health.[22]

The fourth risk factor for caries is school environment, where only 7.95% teachers practiced dental health school effort. In this research, 61.16% students deemed the practice of dental health school effort badly. Dental health school effort underlines the importance of counseling, brushing teeth together, and regular oral and dental check up. Consequently, health education teachers are responsible to remind the students about the right way to brush their teeth and the importance of brushing their teeth at least twice a day, after breakfast and before going to bed, with fluoride tooth paste.[23] The practice of Usaha Kesehatan Gigi Sekolah is expected to influence and motivate children to take care of their dental health, and thus lowering the risk of caries. This is because children will receive information

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about oral and dental health from their teachers.[24] The role and support from school, especially teachers, are very significant for the success of school health program because teachers can interact directly with the students to give information.[25]

Based on the result of the research, it can be concluded that the order of caries risk factors in children based on child dental caries predictor assessments are oral and dental condition, children's behavior, mothers' behavior, and school environment.

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