Analysis of The Most Dominant Dental Carries Risk Factors on High def-t and DMF-T Value of Students Age 6-12 Years

by Perpustakaan IIK Bhakti Wiyata

Submission date: 25-Apr-2026 01:59AM (UTC+0700)
Submission ID: 2501063034
File name: 2333_Ardiwirastuti_-_ANGGRAINI_DYAH_SETIYARINI.pdf (297.57K)
Word count: 2560
Character count: 12994

Journal of Oral Health Care
Vol. 12, No. 1, July 2024, pp. 1-6
ISSN 2623-0526 (Online)

Analysis of The Most Dominant Dental Carries Risk Factors on High def-t and DMF-T Value of Students Age 6-12 Years

Ilvana Ardiwirastuti[a, 1*], Balqis Istiqomah Gusbela[b,2], Olivia Maulana Santoso[c, 3], Richa Rochmani Adiningrias[a,4], Sahat Manampin Siahaan[a,5]

[a]Faculty of Dentistry, Bhakti Wiyata Institute of Health Sciences, Kediri, Indonesia
[b]Biotech and Healthcare Management, Taipei Medical University, Taiwan
[1]ilvana.ardiwirasti@iik.ac.id*; [2]d931112001@tmu.edu.tw; [3]oliviadentist.98@gmail.com;
[4]richarochmaniat@gmail.com; [5]siahaan.manampin@iik.ac.id
*Correspondence author:ilvana.ardiwirasti@iik.ac.id

Article Information

Article history:
Accepted : June2024
Revision : June 2024
Published : July 2024

Key Words:
Caries Risk Assessment
def-t
DMF-T

ABSTRACT

Background: Riset Kesehatan Dasar (Riskesdas) shows that the highest rate of dental caries in children occurs in the 5–9 y.o group (92.6%). Dental caries should be prevented early by reducing the factors that cause caries. The def-t/DMF-t caries index can be used to assess the severity of dental caries, while the caries risk assessment can be used to study the various variables that cause dental caries. **Objectives:** To analyze the most dominant risk factors for dental caries with the highest def-T/DMF-T values in students in grades 1-6 at SDN Cenlecen 1 Pakong Pamekasan. **Methods:** This study is analytical and observational with a Cross-sectional method approach. The data analysis used the Chi-square test to examine the relationship between the variables. **Results:** This study shows that the most significant correlation value for high deft-t/DMF-T is eating and drinking sweet foods (p-value, 0.027), followed by having a mother who had dental caries experience, receiving dental care, having teeth lost as a result of caries, having visible plaque, and exposed root surfaces. **Conclusion:** The most dominant risk factor for dental caries for high def-T/DMF-T rates at SDN Cenlecen 1 Pakong Pamekasan is eating and drinking sweet foods.

This is an open access article under the CC–BY-SAlicense.

DOI: 10.29238/ohc.v12i1.2333

Introduction

Basic Health Research (Riskesdas) in 2018, the prevalence rate of children's dental caries in Indonesia was still quite high, namely 88.8%, with the highest prevalence in the 5-9 year age group (92.6%).[1] Ages 5-9 years are included in the school-age group. School-age (6-12 years) is an important age in the growth and physical development of children.[2] School-aged children (6-12 years) tend to have a high risk of caries because they like to consume food and drinks according to their wishes, such as sweet foods and drinks.[3] Caries in children hurt oral cavity functions such as eating, drinking, and speaking. Caries also disrupt the growth and learning process. If left untreated, caries will spread and cause severe pain, abscesses, and difficulty swallowing, which will ultimately affect overall physical health.[4]

The causes of dental caries are multifactorial, caused by direct and indirect factors. Factors that cause dental caries include plaque, microorganisms, diet, carbohydrates, and time, while indirect factors that cause caries include socioeconomic, behavioral, and environmental factors.[5]

Early detection analysis of the factors that cause caries can be assessed with the help of dental caries risk factor assessment forms including, risk factors for dental caries by ADA (American Dental Association), AAPD (American Academy of Pediatric Dentistry), CAMBRA (Caries Management By Risk Assessment), and Cariogram. The most frequently and easily used dental caries risk factor assessment form is the ADA. The ADA assesses caries risk through three factors, including observation of contributing conditions, general health, and clinical conditions. Researchers want to see the highest level of correlation between these three factors and the incidence of children's dental caries.[6] The Objectives of this study is to analyze the most dominant risk factors for dental caries with the highest def-t/DMF-T values in students in grades 1-6 at SDN Cenlecen 1 Pakong Pamekasan.

Methods

This type of research is Observational Analytical with a Cross-Sectional design. The population in this study were students in grades 1-6 at SDN Cenlecen 1, totaling 126 students. The research sample was 56 students determined using a simple random sampling technique. This research was conducted at SDN Cenlecen 1 Pakong Pamekasan in May 2023, and was declared ethically appropriate by the dental faculty team (Number: 213/FKG/EP/V/2023).

Data collection instruments used ADA-modified caries risk factor questionnaire sheets, and dental examination sheets that had been tested for validation and reliability. Data were processed and analyzed using Statistical Data Processing Software (SPSS) with a relationship test using Chi-Square between variables.

Result

The results of this study shows at the following tables.

Table 1. Frequency Distribution Based on def-t and DMF-T Numbers

	def-t		DMF-T	
	Total	**Percentage**	**Total**	**Percentage**
High	19	76%	28	90,3%
Very High	6	24%	3	9,7%
Total	25	100%	31	100%

Table 1 shows that of the 56 students in the sample, there were 25 children with def-t and 31 children with DMF-T, from the 25 children who had left scores, 19 (76%) of them had high deft scores. The 31 children who had DMF-T numbers, 28 (90,3%) children had high DMF-T numbers and 3 others had very high DMF-T numbers.

Table 2. Frequency Distribution Based on Class

Grade	**def-t**		**DMF-T**	
	Total	**Percentage**	**Total**	**Percntaeg**
1	11	44%		
2	11	44%		
3	3	12%	2	6,5%
4			11	35,5%
5			8	25,8%
6			10	32,3%
Total	25	100%	31	100%

Table 2 shows that the highest caries rates (def-t) were in classes 1 and 2 (44%) and the highest caries rates (DMF-T) were in class 4 (35,5%), and the lowest caries rate was in class 3.

Table 3. Frequency Distribution Based on Gender

	def-t		DMF-T	
	Total	Percentage	Total	Percentage
Male	13	52%	13	41,9%
Female	12	48%	18	58,1%

Table 3 shows that the highest def-t figures were found in male students with 13 students (52%) , followed by female students with 12 students (48%). The highest DMF-T rate was found in female students with a total of 18 students (41,9%), followed by male students with a total of 13 students (58,1%).

Table 4. Frequency Distribution Based on the Average Questionnaire Value

	Percentage
Contributing Factors	53,75%
General Health Condition	22%
Clinical Conditions	43,3%

Table 4 shows that the largest factor in the caries risk factor questionnaire is Contributing Factors at 53.75%, followed by Clinical Condition at 43.3%, and the smallest average value in the questionnaire is General Health Condition at 22%.

Table 5. Chi Square Test Results for caries risk factors with def-t and DMF-T

Contributing Factors		
Chi-Square Test	**Asymp. Sig (2-sided)**	**Explanation**
Q1 * def/DMF	0,134	Not Related
Q2 * def/DMF	*0,027	Related
Q3 * def/DMF	*0,037	Related
Q4 * def/DMF	*0,04	Related
General Health Condition		
Chi-Square Test	**Asymp. Sig (2-sided)**	**Explanation**
Q8 * def/DMF	0,56	Not Related
Clinical Conditions		
Chi-Square Test	**Asymp. Sig (2-sided)**	**Explanation**
Q10 * def/DMF	-	Not Related
Q11 * def/DMF	*0,044	Related
Q12 * def/DMF	*0,014	Related
Q13 * def/DMF	0,099	Not Related
Q15 * def/DMF	*0,024	Related
Q17 * def/DMF	0,087	Not Related

Table 5. shows that there is a relationship between the high def-t/DMF-T variables in questionnaire numbers 2, 3, 4, 11, 12, and 15 with a Sig (2-tailed) value <0.05. In questionnaires number 1, 8, 10, and 13 there is no relationship because the Sig (2-tailed) value is <0.05, then from several related questionnaires, the most significant relationship was found in questionnaire 12 with the Sig (2-tailed) value) of 0.01, as well as on questionnaire 15 with a Sig value (2-tailed) 0.024, questionnaire 2 with a Sig value (2-tailed) 0.027, questionnaire 3 with a Sig value (2-tailed) 0.037, questionnaire 4 with a Sig value (2-tailed) 0.04, and questionnaire 11 with a Sig value (2-tailed) 0.044. The results of this data show that the most dominant caries risk factor is the high def-t/DMF-T number for the contributing condition category, namely Questionnaire 2 with a Sig value (2-tailed) 0.027, followed by Questionnaire 12 with a Sig value (2- 2-tailed) 0.014 in the Clinical Condition category. There is no relationship whatsoever in the General Health Condition category.

Discussion

This research was conducted on children with high and very high def-t and DMF-T numbers to determine the risk factors for each individual using the modified ADA (American Dental Association) dental caries risk factor form which has been translated into Indonesian. Table 2 shows that the highest rate of dental caries is found in students in grades 1, 2, and 4. The high rate of caries in children in grades 1 and 2 (aged 6-7 years) can be caused by children's

low knowledge about how to maintain healthy teeth and mouth, lack of parental supervision, high consumption of cariogenic foods, as well as a lack of awareness in maintaining dental health at that age.[7] Table 3 shows that the prevalence of caries in female students is higher than in male students. This could be due to the tendency for girls to snack more than boys, which is proven by Fankari's research that the number of caries in girls is more than in boys due to differences in the frequency of snacks.[8] Girls also have more estrogen than boys, an increase in this hormone during menstruation can reduce the rate of saliva and be a risk factor for increasing the incidence of caries.[9]

ADA modifications for caries risk factor research in research are divided into 3 main factors, namely: 1) Contributing factors 2) General health conditions, and 3) Clinical conditions. The research results of Table 4 show that the largest percentage is contributing factors (53.75%). Questionnaires included in the contributing factors include frequency of fluoride exposure, eating/sweet drinks, caries experience of mother, caregiver, siblings, and history of dental care. This is in line with the results of statistical tests in Table 5 which show that the highest correlation value for the incidence of high def-t and DMF-T numbers is eating sweet drinks (p-value 0.027). These results are in line with research by Erawati, and Meyer and Enix which shows the low knowledge of parents and children about dental and oral health, including the risk of consuming excess cariogenic foods.[7,10] The low level of knowledge of parents/caregivers was also proven by a significant correlation in questionnaire number 3 (p-value 0.037). Consumption of sweet foods and drinks is closely related to caries because elementary school children often consume sweet snacks and drinks such as candy, chocolate, ice cream, and other sweet drinks. These sweet foods and drinks tend to be consumed by children outside of meal times so the frequency of tooth exposure to cariogenic materials will be longer. This causes the risk of caries in children to also increase.[11,12] The high risk of sweet foods/drinks in school children is also supported by research by Ruminem, regarding children's habits of consuming snacks both at school and outside school. The types of snacks consumed are sweet and have high cariogenic content. Examples of types of sweet foods consumed by children are ice cream, chocolate, candy, and sweet wafers.[13] Research by Melinda and Wowor shows Students who have a high level of consumption of cariogenic foods will have a high risk of dental caries, while students who have a low consumption of cariogenic foods will have a low risk of caries.[14,15]

Conclusion

This study concludes that there is a correlation between the high number of def-t and DMF-T on the caries risk factor analysis questionnaire. The factors that play the most roles are the contributing factors, while the correlation of the most dominant contributing factors related to high def-t and DMF-T numbers is consuming sweet foods.

References

1. Kemenkes RI. Hasil Utama RISKESDAS 2018 Provinsi Jawa Timur. Kementerian Kesehatan Republik Indonesia. Badan Penelitian dan Pengembangan Kesehatan; 2018.
2. Yusmanijar A. Hubungan Tingkat Pengetahuan tentang Kesehatan Gigi dan Mulut dengan Perilaku Perawatan Gigi dan Mulut Pada Anak Usia Sekolah 7-9 Tahun di SD Islam Al Amal Jaticempaka. Afiat 501. 2019;80-91.
3. Bebe ZA, Susanto HS, Martini M. Faktor Risiko Kejadian Karies Gigi Pada Orang Dewasa Usia 20-39 Tahun Di Kelurahan Dadapsari, Kecamatan Semarang Utara, Kota Semarang. Jurnal Kesehatan Masyarakat. 2018;6:365-374.
4. Apro V, Susi S, Sari DP. Dampak Karies Gigi Terhadap Kualitas Hidup Anak. Andalas Dent J. 2020;8:89-97.
5. Ali M, Nurjazuli N, Sulistiyani S, Budiono B, Hanani Y. Analisis Faktor Risiko Lingkungan dan Perilaku Pada Kejadian Karies Gigi Anak Sekolah Dasar di Kecamatan Kempas Kab.Indragiri Hilir. Jurnal Ners. 2024;8(1):667-674.
6. Featherstone JDB, Crystal YO, Alston P, Chaffee BW, Doméjean S, Rechmann P, et al. A Comparison of Four Caries Risk Assessment Methods. Front Oral Health. 2021;2.
7. Erawati MD, Sidiartha IGAFN, Sudirman PL. Hubungan Pengetahuan Anak dan Orang Tua tentang Menjaga Kesehatan Gigi dan Mulut dengan Indeks Karies Gigi pada Anak Usia 6-7 Tahun di SD Negeri 1 Gunaksa. Bali Dent J. 2021;5:82-87. doi: 10.51559/bdj.v5i2.162.
8. Fankari F. Hubungan Tingkat Kejadian Karies Gigi Dengan Status Gizi Anak Usia 6 -7 Tahun Di SD Inpres Kaniti Kecamatan Kupang Tengah Kabupaten Kupang. Jurnal Info Kesehatan. 2018.
9. Listrianah L, Zainur RA, Hisata LS. Gambaran Karies Gigi Molar Pertama Permanen Pada Siswa – Siswi Sekolah Dasar Negeri 13 Palembang Tahun 2018. JPP J Kesehat Poltekkes Plb. 2019;13:136-149.
10. Meyer F, Enax J. Early Childhood Caries: Epidemiology, Aetiology, and Prevention. Int J Dent. 2018;2018:1-7. doi: 10.1155/2018/1415873.
11. Winahyu KM, Turmuzi A, Hakim F. Hubungan antara Konsumsi Makanan Kariogenik dan Risiko Kejadian Karies Gigi pada Anak Usia Sekolah di Kabupaten Tangerang. Faletehan Health J. 2019;6:25-29.
12. Melinda QET, Edi IS, Marjianto A. Hubungan Pengetahuan Makanan Kariogenik Dengan Kejadian Karies Anak 6-12 Tahun Lingkungan Rt 003/003 Manyar Sabrangan Surabaya. Indonesia. Journal Health Medika. 2022;2:312-321
13. Ruminem R, Pakpahan RA, Sapariyah S. Gambaran Konsumsi Jajanan dan Kebiasaan Menyikat Gigi Pada Siswa Yang Mengalami Karies Gigi di SDN 007 Sungai Pinang Samarinda. Jurnal Kesehatan Pasak Bumi Kalimantan. 2020;2:60-69.
14. Teju Melinda QE, Sarwo Edi I, Marjianto A. Hubungan Pengetahuan Makanan Kariogenik dengan Kejadian Karies Anak 6-12 Tahun di Lingkungan RT 003/003 Manyar Sabrangan Surabaya. IJOHM. 2022;2(3):312-321.
15. Wowor VNS, Wahyuni R, Rokot GFY. Hubungan Konsumsi Makanan Kariogenik dan Kejadian Karies Gigi pada Anak Usia Sekolah di Desa Wori. E-GiGi. 2023;12(2):227-232. doi:10.35790/eg.v12i2.51343.

Analysis of The Most Dominant Dental Carries Risk Factors on High def-t and DMF-T Value of Students Age 6-12 Years

ORIGINALITY REPORT

8%	6%	7%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	journal2.unusa.ac.id Internet Source	1%
2	journal-denta.hangtuah.ac.id Internet Source	1%
3	jurnalkesehatan.unisla.ac.id Internet Source	1%
4	Mira Indah Pusponegoro, Ratih Larasati, Agus Marjianto. "The Role of Parents and Teachers In Maintaining Oral Health With Dental Caries in Children With Down Syndrome", International Journal of Advanced Health Science and Technology, 2024 Publication	1%
5	journals.unpad.ac.id Internet Source	1%
6	www.ispcd.org Internet Source	1%
7	Muh Fauzar Al-Hijrah, Armidayanti Armidayanti. "Mother's Knowledge About Dental Health With Carrying Events In Children In Public Elementary School 1 Saleppa, Banggae District", Preventif : Jurnal Kesehatan Masyarakat, 2020 Publication	1%

8	Muhammad Izzul Widad Fahmi, Risya Cilmiaty, Ida Nurwati. "Correlation between Milk Chocolate Consumption Habit and Chronotype with Gingivitis in Children with Mixed Tooth Period", Jurnal Aisyah : Jurnal Ilmu Kesehatan, 2023 Publication	1 %
9	Sinta Silaban. "PREVALENSI KARIES GIGI GERAHAM PERTAMA PERMANEN PADA ANAK UMUR 8 – 10 TAHUN DI SD KELURAHAN KAWANGKOAN BAWAH", e-GIGI, 2013 Publication	<1 %
10	ppjp.ulm.ac.id Internet Source	<1 %
11	Ida Rahmawati, Rifqoh, Anderi Fansurna. "Pencegahan Penyakit Parasit Gigi Melalui Penyuluhan Dan Pendampingan Menggosok Gigi Anak Sd Sungai Tabuk Keramat I Martapura", Jurnal Rakat Sehat : Pengabdian Kepada Masyarakat, 2023 Publication	<1 %
12	repository.unej.ac.id Internet Source	<1 %
13	www.mdpi.com Internet Source	<1 %
14	Hurriyati Ratih, Tjahjono Benny, GafarAbdullah Ade, Sulastri, Lisnawati. "Advances in Business, Management and Entrepreneurship", CRC Press, 2020 Publication	<1 %
15	Rosa Amalia, Ida Chairanna Mahirawatie, Agus Marjianto. "Maintenance of Dental and	<1 %

Oral Health of High Class Students Using Virtual Reality Box Media (Study at SDN Rejosopinggir Tembelang Jombang)", International Journal of Advanced Health Science and Technology, 2024

Publication

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		

Analysis of The Most Dominant Dental Carries Risk Factors on High def-t and DMF-T Value of Students Age 6-12 Years

GRADEMARK REPORT

FINAL GRADE

/100

GENERAL COMMENTS

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6