

OVERVIEW OF EARLY CHILDHOOD CARIES AND PREVENTION PRACTICES IN PRESCHOOL CHILDREN IN PONTIANAK

(GAMBARAN EARLY CHILDHOOD CARIES DAN PRAKTIK PENCEGAHANNYA PADA ANAK PRASEKOLAH DI PONTIANAK)

Rhabiah El Fithriyah^{1*}, Rina Putri Noer Fadilah², Muhammad Fiqri
Pratama³

¹Department of Pedodontics, Faculty of Dentistry, Universitas Jenderal
Achmad Yani, Cimahi, Indonesia

²Department of Public Health, Faculty of Dentistry, Universitas Jenderal
Achmad Yani, Cimahi, Indonesia

³Faculty of Dentistry, Universitas Jenderal Achmad Yani, Cimahi,
Indonesia

*Corresponding author

rhabiah.fithriyah@lecture.unjani.ac.id

JHDS.unjani.ac.id/jite
Doi: 10.54052/jhds.

Article History
Received: 01/06/2023
Accepted: 01/07/2023

ABSTRACT

Early Childhood Caries (ECC) is a dental caries disease in children characterized by one or more carious lesions (cavitory or non-cavitated), primary teeth missing/removed due to caries, or primary teeth filled in children under 71 months of age. Prevention of ECC can be done from the time of pregnancy, which aims to prevent the transmission of bacteria that cause dental caries from mother to child. Prevention of ECC continues when the baby is born with the help of parents to keep the child's teeth clean and maintain the child's diet. The research aims to discover how ECC describes and practices prevention in preschool children in Pontianak City. This research design is descriptive to see an overview of ECC and its prevention practices in preschoolers. Results DMFT examination on 107 kindergarten children aged 3-5 years, 13

children were free from caries, while 94 children had caries. Caries' status in the calculation of the DMFT index was determined according to WHO criteria, namely 0.0-1.1 very low, 1.2-2.6 low, 2.7-4.4 moderate, 4.5-6.5 high, >6.6 is very high. The DMFT index status assessment results get an average DMFT index value of 7.046, which is included in the very high category. Meanwhile, the average ECC prevention practice for children in Pontianak is 63.72%, which is included in the good category. Based on the research results, it can be concluded that the caries status of kindergarten children aged 3-5 years in Pontianak City obtained the DMFT index, which includes the very high category. While preventing ECC in kindergarten children aged 3-5 years in the city of Pontianak obtained scores included in the good category. Expected with this research, parents can better maintain and improve their health and well-being by applying knowledge about how to maintain children's dental and oral health so that they can give directions to children better to maintain good oral and dental health and the age of 3-5 years are very susceptible to caries.

Keywords: Early Childhood Caries (ECC); ECC prevention practices; preschoolers

ABSTRAK

Early Childhood Caries (ECC) adalah penyakit karies gigi pada anak yang ditandai dengan satu atau lebih lesi karies (kavitas atau non-kavitas), terdapat gigi sulung yang hilang/sudah dicabut akibat karies, atau gigi sulung yang sudah ditambal pada anak usia di bawah 71 bulan. Pencegahan ECC sudah dapat dilakukan dari masa kehamilan yang bertujuan untuk mencegah diturunkannya bakteri penyebab karies gigi dari ibu kepada anaknya. Pencegahan terjadinya ECC terus berlanjut ketika bayi sudah lahir dengan bantuan dari orangtua untuk menjaga kebersihan gigi anak dan menjaga pola makan anak Tujuan penelitian ini adalah untuk mengetahui bagaimana gambaran ECC dan praktik pencegahannya pada anak prasekolah di kota Pontianak.

Rancangan penelitian ini adalah deskriptif, untuk melihat gambaran ECC dan praktik pencegahannya pada anak prasekolah. Hasil pemeriksaan dmft pada 107 anak TK usia 3-5 tahun, sebanyak 13 anak bebas dari karies sedangkan untuk 94 anak mengalami karies. Status karies dalam perhitungan indeks dmft ditentukan menurut kriteria WHO yaitu 0.0-1.1 sangat rendah, 1.2-2.6 rendah, 2.7-4.4 sedang, 4.5-6.5 tinggi, >6.6 sangat tinggi. Hasil penilaian status indeks dmft di dapatkan nilai rata-rata indeks dmft sebesar 7.046 yang termasuk kedalam kategori sangat tinggi. Sedangkan untuk rata-rata praktik pencegahan ECC anak di kota Pontianak sebesar 63.72% yang termasuk kedalam kategori baik. Berdasarkan hasil penelitian yang telah dilakukan dapat disimpulkan bahwa status karies Anak TK Usia 3-5 tahun di Kota Pontianak didapatkan indeks dmft yang termasuk kedalam kategori sangat tinggi. Sedangkan praktik pencegahan ECC pada Anak TK Usia 3-5 tahun di Kota Pontianak didapatkan nilai yang termasuk kedalam kategori baik. Diharapkan dengan adanya penelitian ini para orang tua agar dapat lebih menjaga dan meningkatkan serta menerapkan pengetahuan tentang cara memelihara kesehatan gigi dan mulut anak agar dapat memberi arahan pada anak untuk lebih memelihara kesehatan gigi dan mulut dengan baik dan benar karena pada usia 3-5 tahun sangat rentan terkena karies.

Kata kunci: anak prasekolah; Early Childhood Caries (ECC); praktik pencegahan ECC

INTRODUCTION

According to Riskesdas in 2018, it is known that the prevalence of caries in Indonesia is still relatively high at 88.8%, while for the 3-4 years age group, the caries prevalence is still relatively high at 81.5% and the 5-9 years age group is 92.6 %.

Based on the 2018 Basic Health Research (Riskesdas) in Indonesia, the prevalence of the population aged 3-4 years who brushed their teeth every day was 86.7%, but the correct time to brush their teeth aged 3-4 was only 1.1%. The prevalence at the age of 5-9 years who brushed their teeth daily was

93.2%, and the correct time to brush their teeth at the age of 5-9 years was 1.4%.¹

American Dental Association (ADA) describes ECC as the presence of one or more decayed, missing or filling children's primary teeth from birth to 71 months of age.^{2,3} The results of Riskesdas in 2018 stated that the largest proportion of dental problems in Indonesia was damaged/cavities/sick teeth, 45.3%. Based on the Riskesdas of West Kalimantan province results, the proportion of decay/cavities/sickness in the province of West Kalimantan was 49.6%, and for Pontianak, it was 39.52%.^{1,4}

Based on Pudyasari et al. (2017) regarding the practice of children in preventing dental caries on the incidence of Early Childhood Caries (ECC) in preschool-age children, it is known that as many as 86.7% of respondents experienced caries with an average caries index (dmft) of 7.63 which was included in the very category. High. Several factors can cause caries in children, one of which is the poor practice of children in preventing caries.⁵ According to Utami et al. (2015) on the factors related to the dental caries status of preschool children in the Sleman district 2015, it was found that the frequency of brushing teeth, the pH of saliva and dental plaque are factors that exacerbate the occurrence of dental caries in children. The

frequency of brushing teeth is a factor that has an important role in the incidence of dental caries in preschool children. Brushing teeth properly and controlling diet is one way to prevent dental caries in children. Parents have a very important role in maintaining and shaping oral health behavior in children.⁶

Dental caries disease that generally occurs in children is Early Childhood Caries (ECC). ECC is defined as the surface of the primary tooth damaged by infection or lost due to caries, destroying the entire tooth. ECC begins with the formation of a hole in one of the surfaces of the primary teeth, which, if not treated immediately, can damage the primary teeth as a whole.⁷

Several preventive measures can be taken to avoid the occurrence of ECC, including not giving children sweet, soft and sticky foods that are high in sugar, not giving children formula milk and breast milk when the child is sleeping, and parents must know how to keep their teeth and mouth clean. Children at least brush their teeth at least two times a day.⁴

If children who have experienced ECC do not receive proper care immediately, it can cause various adverse effects on the stage of growth and development in children. ECC is an early stage of dental caries in children. Although it is not life-threatening, its impact on

individuals and society is large.^{8,9} At the stage of caries that affects the tooth enamel, it can cause a defect in the enamel, which, if not treated immediately, will spread to the dentin layer and even the pulp tissue, causing pain. Pain arising from untreated caries, until it reaches the pulp tissue can affect weight, speech, and loss of concentration in children and harm learning.^{9,10} It is necessary to take preventive measures to reduce the increasing prevalence of ECC in children. Dental homecare measures and simple and effective preventive dental and oral care programs for children can be preventive management of ECC characterized by demineralization of enamel to become dull white and can spread rapidly throughout the body. The surface of the primary teeth to the point where it will damage the whole tooth.^{11,12} Based on the background that has been made, researchers are interested in researching children's practices in preventing dental caries with the incidence of Early Childhood Caries in preschool children.

METHOD

The research design is descriptive to see the description of Early Childhood Caries and its prevention practices in preschool children. The population in this study were all kindergarten children in

Pontianak which were included in the inclusion criteria, namely children aged 3-5 years, children and parents who were willing to be research subjects, cooperatively participated in and completed the research stages, and children with good general condition.^{13,14} This research was conducted from December 2021 to January 2022 after being declared free from ethical review by the Research Ethics Committee (KEPK), Padjadjaran University.

Calculation of sample size based on the formula used in this study obtained the minimum required sample size of 96 people.^{15,16} With a target sample of 200 people. Sampling was taken utilizing a stratified random sampling technique. Stratified random sampling in this study takes samples from 6 sub-districts in Pontianak, namely East Pontianak, North Pontianak, City Pontianak, West Pontianak, and Southeast Pontianak. Then, in each sub-district, with one kindergarten in the area, re-select one TK to be sampled if the sample is not met. The variables in this study were Early Childhood Caries and its prevention practices. The tools used in this study were an online questionnaire and the "HI BOGI" application using an Android-based smartphone.

RESULT

This research was conducted from

December 2021 to January 2022. Data retrieval using Google Forms was done online, and children's dental examinations were carried out using the "HI BOGI" application on 107 kindergarten children in 6 sub-districts, Pontianak City. Respondents were selected based on exclusion criteria.. This study aims to determine the description of ECC and its prevention practices in kindergarten children in Pontianak aged 3- 5 years.

Table 1. Characteristics of research subjects in kindergarten children in Pontianak City aged 3- 4 years

Characteristics	Person (n)	Percentage (%)
Gender		
Man	40	37.4
Woman	67	62.6
Age		
3 years	1	1
4 years	43	40.2
5 years	63	58.8
Region		
North Pontianak	20	18.7
Southeast Pontianak	20	18.7
East Pontianak	20	18.7
South Pontianak	22	20.5
West Pontianak	11	10.2
Pontianak City	14	13.1

The study result showed that most of them are five years old and most are women. Most of the subjects were in South Pontianak.

Table 2. Average dental caries status in kindergarten children in Pontianak

DMFT	
Mean±SD	7.04±4.85
Min-Max	0-20

The average DMFT index for kindergarten children aged 3-5 years in the city of Pontianak using the "HI BOGI" application is 7.046 with a minimum dmft of 0 and a maximum of 20. Based on the calculation of the DMFT index according to the WHO category, this value belongs to the very high category.

Table 3. Description of dental caries status in kindergarten children in Pontianak City by region

Region	DMFT Index	Category
North Pontianak	6.0	High
Southeast Pontianak	7.5	Very high
East Pontianak	7.5	Very high
South Pontianak	7.3	Very high
West Pontianak	7.5	Very high
Pontianak City	6.5	Very high
Pontianak	7.0	Very high

Based on Table 3, the Pontianak city area with the highest DMFT index is 7.5 in the sub-districts of Southeast Pontianak, East Pontianak, West Pontianak, and Pontianak City. Meanwhile, the lowest DMFT index is 6.0 in the North Pontianak sub-district.

Table 4. An overview of ECC prevention practices in kindergarten children in Pontianak City

Category	Person (n)	Percentage (%)
Well	90	84.11
Bad	17	15.89
Total	107	100

Based on the data in table 4 it is known that the kindergarten children in Pontianak aged 3- 5 years who have a good category of ECC prevention practices are 90 children (84.11%), while those who have a bad category are 17 children (15.89%).

Table 5. Average value of ECC prevention practices in kindergarten children in Pontianak City

	Preventive practices
Mean±SD	63.72±14.43
Min-Max	30.30-93.94

Table 5 shows that the average practice of preventing ECC in kindergarten children aged 3-5 years in Pontianak City using Google Forms is 63.72, with a minimum practice value of 30.30 and a maximum of 93.94. Based on the ECC prevention practice calculation, this value is included in the good category.

Table 6. Category of ECC prevention practices for kindergarten children aged 3-5 years in the Pontianak City area

Region	Practice	Category
North Pontianak	61.82	Well
Southeast Pontianak	61.97	Well

East Pontianak	66.82	Well
South Pontianak	65.98	Well
West Pontianak	56.47	Well
Pontianak City	66.67	Well
Pontianak	63.72	Well

Based on Table 6, the Pontianak city area with the highest ECC prevention practice is 66.82 in the East Pontianak district. Meanwhile, the lowest ECC prevention practice was 56.47 in the West Pontianak sub-district.

DISCUSSION

From the results of research that has been carried out regarding the description of Early Childhood Caries and its prevention practices in preschool children in Pontianak, it was found that the DMFT examination results in 107 kindergarten children aged 3-5 years, as many as 13 children were free from caries while for 94 children had caries. Caries' status in the calculation of the DMFT index was determined according to WHO criteria, namely 0.0-1.1 is very low, 1.2-2.6 low, 2.7-4.4 Moderate, 4.5-6.5 high, >6.6 is very high.¹³ Based on the sub-district of Pontianak city, the DMFT index in North Pontianak sub-district is high. At the same time, it is in the very high category in Southeast Pontianak, East Pontianak, West Pontianak, and Kota Pontianak sub-districts. The DMFT index status assessment results get an average DMFT

index value of 7,046, which is included in the very high category.

Based on the results of research that has been carried out, it shows that kindergarten children aged 3-5 years in Pontianak have an average DMFT index, which is included in the very high category. It is the same as the results of Riskesdas in 2018, which show that the age group of 3- 4 years and 5-9 years in Indonesia is still high.^{1,17} Although the results for preventing ECC have scored in the excellent category, it is still considered insufficient to prevent the occurrence of ECC in children. Most preschoolers can brush their teeth, but children still need to be supervised and guided by their parents so that they brush their teeth properly at least two times a day.

Based on the results of previous studies regarding the practice of children in preventing dental caries on the incidence of Early Childhood Caries (ECC) in preschool-aged children in the Bandarharjo Public Health Center work area, the number of respondents experiencing dental caries with an average caries index (dmft) of 7.63 is included in the very high category. However, the practice results of most of the children were in the good category, namely 55.1. Many risk factors can cause dental caries in children, including children's practices in preventing dental caries, such as frequency of brushing teeth, unhealthy

eating patterns, and the role of parents in supervising and guiding children to maintain oral and dental health.^{18,19} Sometimes, children unwittingly follow their parents' attitudes, behaviors, and habits. Therefore, the role of parents is significant in changing children's bad habits and eating patterns.²⁰

CONCLUSION

Based on the results of the research that has been done, it can be concluded that the caries status of kindergarten children aged 3-5 years in the city of Pontianak obtained a DMFT index which is included in the very high category. While the practice of preventing ECC in kindergarten children aged 3-5 years in Pontianak was found to be in the good category.

CONFLICT OF INTEREST

We, with this, declare that there is no conflict of interest in the scientific articles we write.

ACKNOWLEDGEMENT

Our thanks go to the professionals who assisted in the research and preparation of the paper.

REFERENCES

1. Agency for Health Research and Development. Riskesdas 2018 National

- Report. Health Research and Development Agency. 2018;198.
2. Astuti ESY, Rochmawati F. Early Childhood Caries (Ecc) in Preschool Age Children in Wanasari Hamlet, North Denpasar District. *Interdental J Dentistry*. 2018 Dec 18;14(2):56–9.
 3. Widayanti N. Factors related to dental caries in children aged 4-6 years. *J Berk Epidemiol*. 2014;2(2):196–205.
 4. Ministry of Health RI BP and PK. Report of West Kalimantan Province RISKESDAS 2018. West Kalimantan Health Service. 2018;1–493.
 5. Pudyasar Sekti Raras, Susanto Setyawan Henry, Hestningsih Retno UA. Overview of Children's Practices in Preventing Dental Caries with Early Childhood Caries (Ecc) Incidence in Preschool Children in the Bandarharjo Health Center Work Area, North Semarang, Semarang City. *J Masy Health*. 2017;5(1):467–74.
 6. Utami S. Factors Associated with Dental Caries Status of Preschool Age Children in Sleman Regency in 2015. *Mutiara Med J Medicine and Health*. 2018;18(2):67–70.
 7. J. Prevention and Treatment of Early Childhood Caries (ECC). *JMedHeal*. 2016 Feb 28;1(3):296–304.
 8. El Fithriyah R, Herryawan. The Relationship of Mother's Knowledge Level About Caries Prevention And Its Relationship With The Incidence Of Early Childhood Caries In Pre- School Age Children In Cimahi City. *Med Kartika J Medicine and Health*. 2018 Apr 30;1(Volume 1 No 2):106–44.
 9. Erlin PT, Risti S. Infant oral care program in the prevention of early childhood caries. *J Indonesia Dent Assos*. 2018;1(1):37–41.
 10. Astuti EY. Etiology, Impact and Management of Early Childhood Caries (ECC). *Interdental J Dentistry*. 2020 Dec 10;16(2):57–60.
 11. Imas Masturoh, T NA. *Health Research Methodology*. 1st ed. Jakarta: Health Human Resources Development and Empowerment Agency; 2018;307.
 12. Dahlan MS. *Sample Size and Sampling Method*. 3rd ed. Suslia A, editor. Jakarta: Salemba Medika; 2013;238.
 13. Anggara S, Wulandari E. Dental Caries Index of Grade V Elementary School Students in Rural and Urban Districts in Patrang District, Jember Regency (Dental Caries Index of 5 th Grade Elementary School in Rural and Urban Sub-district. *Artik Ilm Has Researcher Student College* 2012. 2012; 1–6.
 14. Listrianah L, Zainur RA, Hisata LS. Description of permanent first molar tooth caries in students at State Elementary School 13 Palembang in

2018. JPP (Palembang Health Polytechnic Health Journal). 2019 Dec 23;13(2):136–49.
15. Ruslan MRR, Pindobilowo. The relationship between eating habits and the occurrence of dental caries in children. *J Dentist*. 2016;10(2):125–34.
 16. Oktarina O, Tumaji T, Roosihermiatie B. Correlation of Maternal Factors with the Dental and Oral Health Status of Kindergarten Children in Kemayoran Village, Krembangan District, Surabaya City. *Health System Researcher Bul*. 2017 Jun 2;19(4):226–35.
 17. Fatmasari M, Widodo, Adhani R. The relationship between parents' socio-economic level and the dental caries index of junior high school students in South Banjarmasin District. *J Dentist*. 2017;I(1):62–7.
 18. Lely Suratri MA, Sintawati F, Andayasari L. Knowledge, Attitudes and Behavior of Parents regarding Dental and Oral Health in Kindergarten Age Children in the Special Region of Yogyakarta Province and Banten Province in 2014. *Research Media and Health Developers*. 2016 Sep 5;26(2):119–26.
 19. World Health Organisation. WHO expert consultation on public health intervention against early childhood caries: report of a meeting, Bangkok, Thailand, 26-28 January 2016. Rep A Meet – Bangkok, Thailand, 26–28 January 2016. 2016;(January):26–8 .
 20. Dewi AC, Wirata N. Description of primary tooth caries and parents' level of knowledge regarding maintaining dental and oral health in preschool children. *J Dental Health*. 2017;5:2.