



Research Article

The Correlation of Parenting Styles toward Dental Caries in Toddlers

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Abstract

The prevalence of caries shows a percentage of 90% in toddlers in Indonesia. Caries has a negative impact on the body development of toddlers. Through the right parenting style, it is considered to be possible to reduce the caries rate in children under five. This study aims to determine the effect of parenting style on toddler dental caries in Baki District, Sukoharjo Regency. Accordingly, this analytical observational research applied a cross-sectional approach. Samples were taken using a purposive sampling technique involving 111 toddlers and their parents in Baki District. Toddler dental caries was measured using the dmft index, and parenting style was measured by a questionnaire adapted and modified from The Parenting Styles and Dimensions Questionnaire (PSDQ). Process data with IBM SPSS version 20. Results show that the parenting style of most parents involved in this study was authoritative (47,7%), followed by authoritarian (28,8%), and lastly permissive (23,4%). The highest dmft index is found in toddlers raised by permissive parents (7,92). The average education level of mothers in the three parenting styles was at the high school level (65%). The majority of parents' income in a month is in the moderate category. The conclusion showed that parenting style had no effect on toddler dental caries in Baki District, Sukoharjo Regency.

Keywords: caries; parenting style; parents; toddlers

INTRODUCTION

According to the findings of the 2018 Basic Health Research (Riskesdas) survey, the prevalence of dental caries among toddlers indicates that only approximately 10% of children in this age group are free from caries. Caries is a pathological condition of microbial origin that results in the deterioration of the mineralized structures of the teeth. This condition has the potential to impact the overall living standard of toddlers.¹ Caries is responsible for the premature loss of primary teeth of over 530 million children.² The causes of caries are multifactorial, including lack of parental control and poor oral hygiene practices.³

The growth and development stage of a toddler is a critical period for fostering health-conscious behavior. The experience offered throughout this time will have a lasting impact on one's life.⁴ Parenting style has a longitudinal effect on children's behavior, as parenting style correlates with psychological control, which in turn is associated with adverse effects on children's dental health.⁵ A high prevalence of dental caries among toddlers can be attributed to inadequate lifestyle control by the parents or guardians.⁶ Parents play a major role in increasing awareness and knowledge of maintaining oral health. Through habits, interpersonal interactions, parenting patterns, and modeling, these

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habits provide a basis for children to receive the first knowledge as they grow.⁷

The parenting style introduced by Baumrind consists of authoritarian, authoritative, and permissive. Authoritarian parenting style has high control and low warmth when educating children. Parents who consciously or unconsciously apply authoritarian parenting styles force children to submit and comply with every decision. Authoritative parenting is shown by high control with a high level of concern as well.⁸ The last pattern is permissiveness, which is characterized by the habit of parents allowing their children freedom to act. Parents provide little or no restrictions on their behavior. In other words, the child will receive high warmth and low control. Lack of internal control in authoritarian parents in implementing the habit of taking care of their children's teeth and mouth is often encountered. Likewise, permissive parents tend not to encourage their children to care about the health of their oral cavity. This differs from authoritative parenting, where parents are very supportive and sensitive to children's needs and demonstrate positive behavior in making healthier food choices and children's dental hygiene.³ The novelty of this study is in its examination of the impact of parenting style on dental caries in toddlers. One of the health problems in Baki District is an unbalanced diet, which certainly affects the pattern of daily food consumption. Baki District also has the lowest number of visits to community health centers (Puskesmas) compared to other Districts.⁹

Based on this background, this study aims to analyze the correlation between parenting styles and dental caries in toddlers from the Baki District, Sukoharjo Regency, Central Java.

MATERIALS AND METHODS

This study employed an analytical observational approach, utilizing a cross-sectional method to investigate the characteristics of children under the age of

five, as well as their parents, in the Baki District of Sukoharjo Regency, located in the Central Java Province. The study obtained ethical permission from the Health Research Ethics Commission, Faculty of Medicine and Health Sciences, Yogyakarta Muhammadiyah University, with the following reference number: 043/EC-KEPK FKIK UMY/XII/2022. The researchers received the subjects' agreement to participate in the study through informed consent that was approved by the parents of the toddlers.

The study had specific criteria for participant selection, which encompassed toddlers between the ages of 30 and 59 months. During that period, toddlers are considered to have complete teeth.¹⁰ These toddlers were under the care of their biological parents, displayed cooperation in the assessment of the dmft index, and the researchers obtained consent from their parents. The exclusion criteria for this study encompassed toddlers who possessed health conditions that may impact tooth structure development and have a history of systemic disease. Additionally, toddlers who were under the care of an orphanage or similar institution, those who were not being cared for by their biological parents, and those who were absent during the examination were also excluded.

Toddler subjects were selected by village midwives from 14 villages in Baki District according to specified criteria. A total of 180 toddlers and their parents from the initial sample were then re-selected to meet the minimum sample required, namely 97 toddlers and their parents.

Caries data was collected through a clinical examination measuring the dmft index. The parenting styles applied by parents were measured by The Parenting Styles and Dimensions Questionnaire (PSDQ). The questionnaire contained 50 statements to measure the type of parenting style, general subject data, parental income and education, and toddler's toothbrush habits. Toddlers and their parents were gathered at the Office of the Head of

Menuran Village to collect the results of filling out the questionnaire and examining the toddlers. Clinical examination was carried out with a mouth mirror, probe, and tweezers, and the operator was provided with sufficient personal protective equipment (PPE).

Data analysis was carried out using the SPSS software version 20. Consequently, the Spearman correlation test was used to determine the effect of parental parenting on dental caries.

RESULT

As many as 111 toddlers and parents participated in this research, comprising 57 female toddlers and 54 male toddlers. The characteristics of the toddlers classified based on sex are portrayed in Table 1.

The parents involved in this research are classified based on the parenting style that they use. As stated in Table 2, the parenting style of parents is mostly authoritative, with as many as 53 parents (47.7%), followed by 32 parents (28.8%) believing in authoritarian and permissive parenting, with as many as 26 parents (23.4%).

The dmft index in toddlers with the very high category was found most in toddlers who were raised by permissive parents at 46%, according to Table 3. In addition, the average caries index in this group showed a score of 7.92, which was included in the very high category.

Toddlers with authoritative parents showed the lowest dmft index compared to the two other groups, 5.54.

Table 4 displays the correlation between the educational level of mothers and their corresponding parenting styles. A significant proportion of parents possessed a high school (SMA) level of education. Table 5 displays the mean income of parents. The predominant income range of authoritative parents falls between IDR 1,500,000 and IDR 2,499,000. Parents who exhibit authoritarian and permissive parenting styles have an average income of less than IDR 1,500,000. The mean income of parents across the three parenting styles is classified within the middle-income range.

Table 6 presents data on the nighttime toothbrush routines of toddlers, categorized by their parent's style of parenting. According to research, a significant proportion (79%) of toddlers with parents who practiced authoritative parenting do not engage in the habit of brushing their teeth before bedtime. Similarly, it has been observed that toddlers raised by parents who exhibited authoritarian and liberal parenting styles experience challenges in establishing a regular nighttime teeth brushing routine. Specifically, research indicates that approximately 78% and 81% of toddlers, respectively, fail to develop the habit of cleaning their teeth before bedtime.

Table 1. Sex of Toddlers

Category	Frequency	Percentage (%)
Female	57	51.4
Male	54	48.6
Total	111	100

Table 2. Parents Parenting Style

Category	Frequency	Percentage (%)
Authoritative	53	47.7
Authoritarian	32	28.8
Permissive	26	23.4
Total	111	100

Table 3. Toddler Teeth Carries Based on Parenting Styles

Teeth Caries	Parenting Style						$\bar{X}$
	Authorita-tive		Authorita-rian		Permis-sive		
	F	%	F	%	F	%	
a	14	26	8	25	2	8	
b	7	13	3	9	5	19	
c	7	13	7	22	2	8	
d	4	8	2	6	5	19	
e	21	40	12	38	12	46	
Total	53	100	32	100	26	100	
Indeks dmft	5.54		5.84		7.92		6,43

*dmft index criteria: ^avery low, ^blow, ^cmedium, ^dhigh, ^every high

Table 4. Mother's Level of Education

k	Parenting Styles						$\bar{X}$
	Authoritative		Authoritarian		Permissive		
	F	%	F	%	F	%	%
a	0	0	1	3	0	0	1
b	1	2	2	6	3	12	7
c	13	25	7	22	4	15	21
d	32	60	16	50	17	65	58
e	7	13	6	19	2	8	13
f	0	0	0	0	0	0	0
Total	53	100	32	100	26	100	100

*Level of education (k): ^adid not attend school, ^bgraduated elementary school, ^cgraduated middle school, ^dgraduated high school, ^eBachelor's Degree, ^fMaster's Degree

The frequency of toothbrushing for toddlers with authoritative parents, 60% of them brush their teeth as many as or up to twice a day. For toddlers with authoritarian parents, 47% of them brush their teeth less than twice a day. As many as 15 toddlers (58%) who have permissive parents brush their teeth more than twice a day. As presented in Table 7, the t value shows $0.564 > 0.05$, meaning there is no significant difference between the three parenting styles in the frequency of toddler toothbrushing. The majority of toddlers in this study have a fondness for consuming sweet foods (91%), as shown in Table 8. Of toddlers with authoritative parents, 50 children (94%) of them like sweet foods. As many as 88% of toddlers in the

authoritarian parent group showed an interest in sweet foods. The group of toddlers with permissive parenting also showed an interest in sweet foods (92%). Table 9 presents the results of the Spearman correlation test. The statistical analysis conducted to examine the relationship between parenting style and dmft dental caries index criteria in toddlers yielded a p-value of 0.759. The p-value exceeds the threshold of 0.05, indicating a lack of statistically significant correlation between the two variables. The correlation coefficient of 0.029 indicates that the relationship between parenting practices and dental caries in toddlers can be classified as extremely weak.

Table 5. Parents' Level of Income

g	Parenting Style						$\bar{X}$
	Authoritative		Authoritarian		Permissive		
	F	%	F	%	F	%	
a	13	25	13	41	11	42	36
b	34	64	10	31	10	38	44
c	4	7	5	16	3	12	12
d	2	4	4	12	2	8	8
Total	53	100	32	100	26	100	100

*Level of income (g): ^a< Rp1.500.000, ^bRp1.500.000 - Rp2.499.000, ^cRp2.500.000 - Rp3.500.000, ^d> Rp3.500.000

Table 6. Nighttime Teeth Brushing

Nighttime Teeth Brushing	Parenting Style						$\bar{X}$
	Authoritative		Authoritarian		Permissive		
	F	%	F	%	F	%	
No	42	79	25	78	21	81	79
Yes	11	21	7	22	5	19	21
Total	53	100	32	100	26	100	100

Table 7. Teeth Brushing Frequency (f)

f	Parenting Style						$\bar{X}$
	Authoritative		Authoritarian		Permissive		
	F	%	F	%	F	%	
<2	21	40	15	47	11	42	43
≥ 2	32	60	17	53	15	58	57
Total	53	100	32	100	26	100	100

Table 8. Toddler's Fondness in Consuming Sweet Foods (m)

m	Parenting Style						$\bar{X}$
	Authoritative		Authoritarian		Permissive		
	F	%	F	%	F	%	
No	3	6	4	12	2	8	9
Yes	50	94	28	88	24	92	91
Total	53	100	32	100	26	100	100

Table 9. Correlation Between Parenting Style and Teeth Caries in Toddlers

		Parenting Style		Teeth Caries in Toddlers
Spearman	Parenting Style	Coefficient Correlation		1.000
		Sig. (2-tailed)		0.029
		N		111
	Teeth Caries in Toddlers	Coefficient Correlation		0.029
		Sig. (2-tailed)		0.759
		N		111

PARENTAL PARENTING QUESTIONNAIRE IN BAKI DISTRICT, SUKOHARJO REGENCY

A. Identity

Parent's Name:

Age:

Village/Sub-district:

B. Information on How to Fill in

Give a ✓ mark for each statement that corresponds to the parenting you apply to your child

1 = Never done

2 = Once done

3 = Sometimes done

4 = Very often done

5 = Always done

No.	STATEMENT	Assessment				
		1	2	3	4	5
	Warmth and Involvement					
A	Knowing the names of the child's friends					
B	Giving the child reasons why the rules must be followed					
C	Providing comfort/warmth when the child is upset					
D	When two children fight, punish the child first before asking the reason					
E	Exploding/yelling when angry at the child					
F	Letting the child know that we appreciate what the child is trying/achieving					
G	Being responsive to the child's feelings and needs					
H	Encouraging the child to tell us about the problems they are experiencing					
I	Having time with the child					
	Reasoning/Induction					
J	Disciplining a child after a mistake					
K	Explaining the consequences of a child's behavior					
L	Spanking when a child is disobedient					
M	Emphasizing reasons for following rules					
N	Helping a child understand the impact of behavior by talking to them					
O	Explaining how parents feel when a child does good and bad things					
P	Talking and arguing with a child when a child does bad things					
Q	Tell children what behavior they should display when socializing.					
	Democratic Involvement					
R	Taking children's opinions into account when making family decisions					
S	Allowing children to interfere with others					
T	Encouraging children to freely express themselves even when there are disagreements with parents					
U	Expressing affection through hugs, kisses, and holding children					
V	Channeling children's misbehavior into more acceptable activities					

	Good					
W	Sociable and easygoing with children					
X	Shows respect for children's opinions by encouraging them to express them					
Y	Shows sympathy when children are hurt/frustrated					
	Verbal Anger					
Z	Yells when children make mistakes					
AA	Gives physical punishment as a way to discipline children					
BB	Recognizes and is concerned about children's problems at school					
	Physical Punishment					
CC	Slapping a child when he/she does something wrong					
DD	Guiding a child with punishment					
EE	Encouraging a child when he/she is disobedient					
FF	Punishing by taking away privileges from a child if he/she refuses					
GG	Finding it difficult to discipline a child					
HH	Giving a child the opportunity to provide input into family rules					
II	Considering a child's wishes before asking a child to do something					
JJ	Putting his/her own feelings before those of the child					
	Punishment Strategies					
KK	Saying, "I am your parent, and you have to do this," when the child asks why the parent gave the order					
LL	Demanding the child to do something					
MM	Telling the child a punishment and not actually carrying it out					
NN	Threatening the child more often than giving the punishment					
OO	Letting the child be when he/she causes a scene					
PP	Apologizing to the child when he/she makes a mistake					
	Directing					
QQ	Allowing the child to be when the child is bothering others					
RR	Using threats as punishment					
SS	Ignoring the child's bad behavior					
TT	Withholding scolding even when the child acts against our wishes					
UU	Not being sure how to handle the child's bad behavior					
VV	Punishing the child by putting the child in a place alone					
WW	Setting strict rules with kindness					
XX	Worrying that disciplining the child when he or she misbehaves will cause the child to dislike the parent					

DISCUSSION

The average dmft index shows a high prevalence of caries within the three groups of toddlers who are being raised by parents displaying authoritative, authoritarian, and permissive parenting styles. Consistent with prior research, it has been observed that toddlers between the ages of 2 and 5 years in Surabaya exhibit a high dmft caries index.¹¹ Toddlers who

were raised by permissive parents in this study had the highest caries index compared to the other two groups. Previous studies revealed that toddlers aged 3-5 years who were raised by permissive parents had higher dmft results than authoritarian and authoritative groups. Permissive parents are considered to have low control over toddlers. Apart from that, this parenting style is less demanding on

toddlers' behavior in maintaining oral hygiene, healthy food feeding patterns, and consumption of sweet drinks.⁷ The research results showed that the majority of toddlers who were cared for in the three parenting style groups had an interest in sweet foods. Toddler's dental health is closely related to the preferences, demands, and limits that parents place on their child's behavior.¹²

The caries index in the authoritarian toddler group was higher than in the authoritative toddler group. In general, authoritarian parents tend to discipline and control their toddlers more strongly compared to other groups.⁶ However, based on the results of this study, it is possible that dental and oral hygiene in the authoritarian group has not become a major concern. Proven in the nighttime toothbrushing habit of authoritarian groups. The majority of toddlers raised by authoritarian parents do not brush their teeth at night. This condition is also found in the other two parenting styles. Prevention guidelines recommend parental involvement in supervising toothbrushing in children under 7 years old.¹³

The authoritative group exhibited the lowest caries index among toddlers. Consistent with prior scholarly investigations, toddlers who are raised by authoritarian parents exhibit a reduced incidence of dental caries compared to those subjected to alternative parenting methods.¹⁴ Nevertheless, the caries index seen in this particular group was classified as high. One of the influential variables contributing to the issue at hand is the limited extent of parental awareness regarding oral health.¹⁵

Socio-economic factors have been identified as an additional contributing factor to the elevated caries index observed in toddlers.¹⁶ The classification of parental income is divided into three levels: very high, high, medium, and low levels.¹⁷ According to the findings of this empirical study, it has been shown that parents who choose an authoritative parenting style tend to have a predominantly middle-income

level. In contrast, parents who exhibit permissive and authoritarian parenting styles typically possess a monthly income below IDR 1.500.000, hence falling inside the low-income category. Households characterized by lower socio-economic status often exhibit diminished levels of parental care and indulgence towards their children, in contrast to the parenting practices observed in higher-income households.¹⁸

One of the limitations of this study is that parents did not supervise the process of filling out the questionnaire. Potential errors and misconceptions may arise during the process of completing the questionnaire. Further studies are recommended to incorporate comprehensive interviews and the integration of additional measurement tools to assess supplementary aspects that impact parenting habits.

CONCLUSION

Based on the results of the study, there is no correlation between parenting style and dental caries status in toddlers in Baki District, Sukoharjo Regency. Toddlers who were cared for by the three types of parenting showed a high category in the dmft caries index.

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REFERENCE

1. Utami S, Prasepti DI. Hubungan Status Karies Gigi dengan Oral Health Related Quality of Life pada Mahasiswa. *Insisiva Dent J Maj Kedokt Gigi Insisiva*. 2019;8(2):46–52. <http://dx.doi.org/10.18196/di.8207>
2. Shitie A, Addis R, Tilahun A, Negash

- W. Prevalence of Dental Caries and its Associated Factors among Primary School Children in Ethiopia. *Int J Dent*. 2021;2021.
<https://doi.org/10.1155/2021/6637196>
3. Elamin A, Garemo M, Gardner A. Dental Caries and Their Association with Socio-economic Characteristics, Oral Hygiene Practices and Eating Habits Among Preschool Children in Abu Dhabi, United Arab Emirates - The NOPLAS Project. *BMC Oral Health*. 2018;18(1):1–9.
<http://dx.doi.org/10.1186/s12903-018-0557-8>
 4. Feldens CA, Pinheiro LL, Cury JA, Mendonça F, Groisman M, Costa RAH, et al. Added Sugar and Oral Health: A Position Paper of the Brazilian Academy of Dentistry. *Front Oral Health*. 2022;3(April):1–7.
<https://doi.org/10.3389/froh.2022.869112>
 5. Yee AZH, Lwin MO, Ho SS. The Influence of Parental Practices on Child Promotive and Preventive Food Consumption Behaviors: A Systematic Review and Meta-Analysis. *Int J Behav Nutr Phys Act*. 2017;14(1):1–14.
<http://dx.doi.org/10.1186/s12966-017-0501-3>
 6. Kuppens S, Ceulemans E. Parenting Styles: A Closer Look at a Well-Known Concept. *J Child Fam Stud*. 2019;28(1):168–81.
<http://dx.doi.org/10.1007/s10826-018-1242-x>
 7. Sabbarwal B, Puranik MP, Uma SR. Association Between Parental Behavior and Child's Oral Health Among 3–5-Year-Old Children in Bengaluru City. *Int J Clin Pediatr Dent*. 2020;13(6):677–81.
<http://dx.doi.org/10.5005/jp-journals-10005-1856>
 8. Lestari YI, Yumra MA. Pola Asuh Otoritatif dan Psychological Well-Being Pada Remaja. *EjournalUin-SuskaAcId*. 2022;3(2):80–92.
<http://dx.doi.org/10.24014/pib.v3i2.16914>
 9. Dinas Kesehatan Kabupaten Sukoharjo. Profil Kesehatan Kabupaten Sukoharjo. *J Chem Inf Model*. 2018;53(9):1689–99.
 10. Verma N, Bansal A, Tyagi P, Jain A, Tiwari U, Gupta R. Eruption Chronology in Children: A Cross-sectional Study. *Int J Clin Pediatr Dent*. 2017;10(3):278–82.
<http://dx.doi.org/10.5005/jp-journals-10005-1450>
 11. Setijanto D, Bramantoro T, Anggraini ND, Maharani AD, Angesti D, Hidayat DS, et al. The Correlation Analysis of Dental Caries, General Health Conditions and Daily Performance in Children Aged 2–5 Years. *Dent J*. 2020;53(3):122–5.
<http://dx.doi.org/10.20473/j.djmk.v53.i3.p122-125>
 12. Sanders BJ. McDonald and Avery's Dentistry For The Child And Adolescent: Tenth Edition. 2016. 177–184 P. <http://dx.doi.org/10.1016/b978-0-323-28745-6.00010-7>
 13. Almeida CS De, Miccoli LS, Andhini NF, Aranha S, Oliveira LC De, Artigo CE, Et Al. Pediatric Dentistry: Fifth Edition. 2016;5(1):1689–99.
<http://dx.doi.org/10.3861/jshhe.72.3>
 14. Alagla MA, AL Hussyeen A, Alhowaish L. Do Parenting Styles Affect Children's Oral Health in Saudi Arabia? *Cureus*. 2019.
<http://dx.doi.org/10.7759/cureus.6002>
 15. Syaputri DI, Hatta I, Wardani IK. Dentin Jurnal Kedokteran Gigi Def-T Index. 2023; VII(1):33–8.
<http://dx.doi.org/10.20527/dentin.v7i1.8337>
 16. Misrohmasari EAA, Prihatiningrum B. Parenting Styles and Dental Caries Among Preschool Children in a Coastal Area of Jember, Indonesia. *Insisiva Dent J Maj Kedokt Gigi Insisiva*. 2022;11(1):8–12.
<http://dx.doi.org/10.18196/di.v11i1.14385>
 17. Rakasiwi LS. Pengaruh Faktor Demografi dan Sosial Ekonomi Terhadap Status Kesehatan Individu di Indonesia. *Kaji Ekon Dan Keuang*. 2021;5(2):146–57.

<http://dx.doi.org/10.31685/kek.v5i2.1008>

18. Ani SP. Pengaruh Pola Asuh Permisif Orang Tua Terhadap Self-Control (Studi pada Siswa Kelas VIII SMP Negeri 2 Rambang Kabupaten Muara Enim). Psikodidaktika J Ilmu Pendidikan, Psikologi, Bimbingan Dan Konseling. 2020;5(1):56.
<http://dx.doi.org/10.32663/psikodidaktika.v5i1.986>