

## SYSTEMATIC REVIEW

# Family Parenting on the Incidence of Dental Caries in Children: A Systematic Review

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## ABSTRACT

**Introduction:** Dental and oral health problems in the community are still high, this problem is experienced by almost half of the world's population, namely three point fifty eight billion people. Dental caries is a health problem that often occurs in the community, this problem occurs in developing and developed countries. Children's dental health is influenced by several factors such as socioeconomic conditions, knowledge and parenting patterns from parents. The purpose of compiling this systematic review is to find out about parenting patterns on the incidence of dental caries in children. **Methods:** The systematic review used five databases namely PubMed, Proquest, Science Direct, Scopus and Web of Science from the last six years (2017-2022) using the keywords family, parenting, dental caries, and children. Measuring quality using the Joanna Briggs Institute (JBI) and using PICOS for the analysis framework. Descriptive analysis uses narrative method to analyze the data. **Results:** An examination of 10 journals selected from various journals, with sample sizes ranging from 17 to 1539, forms the basis of this systematic review study, which shows how parenting has a significant impact on children's oral and dental health. **Conclusion:** There are three types of family care in dental caries treatment, namely authoritative, authoritarian and permissive. Family-centered authoritative parenting has a positive effect on dental health, especially in reducing the prevalence of dental caries in young children.

**Keywords:** Family; Parenting; Dental Caries and Children.

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cavities/sickness (45,3%). Swollen gums or ulcers (abscesses) that afflict 14% of the Indonesian population are the most common dental and oral health problems (4).

## INTRODUCTION

Dental caries is a complex disease that develops when the flora of cariogenic bacteria interact with each other (1). The most common disease and one that most individuals face all over the world is caries. Caries is caused by excessive sugar consumption, lack of dental health care, and difficulty in accessing dental health service standards (2). Dental and oral health issues continue to be prevalent. Almost half of the world's population suffers from this problem (3.58 billion people). The 11th most common disease in the world is gum disease (periodontal), while In Asia and the Pacific, oral cancer is the third most common type of cancer. (3). According to the results of the Basic Health Research 2018 (Riskesmas), Indonesia has the highest percentage of dental and oral health problems is tooth decay/

Caries is one of the evidences that the oral and dental health conditions of people in Indonesia is not maintained. People in general tend to think that primary teeth do not need to be treated because they will be replaced with permanent teeth, people do not understand that if primary teeth are not treated properly it will cause cavities. As for efforts to support optimal health, efforts in the field of dental health need to be considered (5). Family characteristics and parenting patterns can significantly affect children's relationship between children's oral health and family welfare (6). Most of the characteristics of children such because the personality, behavior, cognitive development, and social skills of a child are strongly influenced by their parents. The level of self-discipline a child exhibits at home affects his ability to form healthy relationships with those around him, both at school and at the dentist's clinic (7).

In order to realize in 2030 caries-free Indonesia, Through the Decree of the Minister of Health Number 189 of 2019 concerning the Committee for Dental and Oral Health, the Ministry of Health established a Committee for Dental and Oral Health. Assisting the Ministry of Health in developing strategic plans and action plans is the responsibility of this committee for dental and oral health efforts, advocating with other stakeholders, monitoring, evaluating, and offer suggestions for solving problems with the implementation of dental and oral health efforts. The committee, which was launched on December 10, 2019, consists of elements from the Ministry of Health, Dental Education, collegiums, professional organizations, and experts. The strategy that can be done is to expand the promotive and preventive efforts of dental health services, as well as the accessibility, quality, and participation of stakeholders involved in dental and oral health services. (2)

In order to realize a caries-free Indonesia, parents need help and support, especially in terms of child care in preventing childhood dental caries. Family relationships and parenting styles were associated with the children’s dental caries prevalence, with poorer parenting function and associations inextricably linked to the prevalence of dental caries (8). The impact of parenting practices on oral health is shown by the similar association between oral health behavior and oral health status as well as the relationship between parenting approaches and dental health status (9). This systematic review study aims to analyze how the impact of family parenting on the risk of dental caries in children.

**Table 1 : Format PICOS**

| PICOS framework   | Inclusion Criteria   | Exclusion Criteria   |
|-------------------|--|--|
| Population        | Studies that focus on the topic of family and population parenting that have a role in the incidence of dental caries in children        | Populations that have no relationship with the incidence of dental caries in children              |
| Intervention      | family parenting   | None   |
| Comparison        | None   |  |
| Outcome           | The results showed that the parenting pattern of the family and the population had a role in the incidence of dental caries in children. | None   |
| Study Design      | Qualitative study, cross sectional study   | Quasy-exerimental study, randomized control and trial, cohort study, case study, systematic review |
| Publication Years | Articles published in the last 6 years (2017-2022)   | Before 2017  |
| Language          | English  | Other than English   |

**METHODOLOGY**

**Literature search terms and search process**

The compilation and collection of this systematic review was carried out in January-February 2022 using secondary data. The search for secondary data sources in the form of journal articles with high and moderate reputation uses five databases: PubMed, Proquest, Science Direct, Scopus and Web of Science.

**Inclusion and Exclusion Criteria**

The study results were selected based on several inclusion criteria and discarded if they did not match the inclusion criteria. The formulation of inclusion criteria uses the PICOS framework (P = population, I = intervention, C = comparator, O = outcome, S = study design), namely using a reputable database, results of the study have been published for the last six years (2017-2022) using English and taking open access journals. A literature search was performed using keywords related to family care and prevalence of dental caries in children such as “family” AND “parenting” AND “dental caries” AND “children” OR parenting AND “family” AND “dental caries”, as shown in Table 1.

**Study Selection**

The article search results obtained 12 articles that were selected and then adjusted to the assessment based on the full text and according to the inclusion criteria so that the remaining 10 articles will be used. The following is a flow chart in this study, as shown in Fig.1. Diagram flow study.

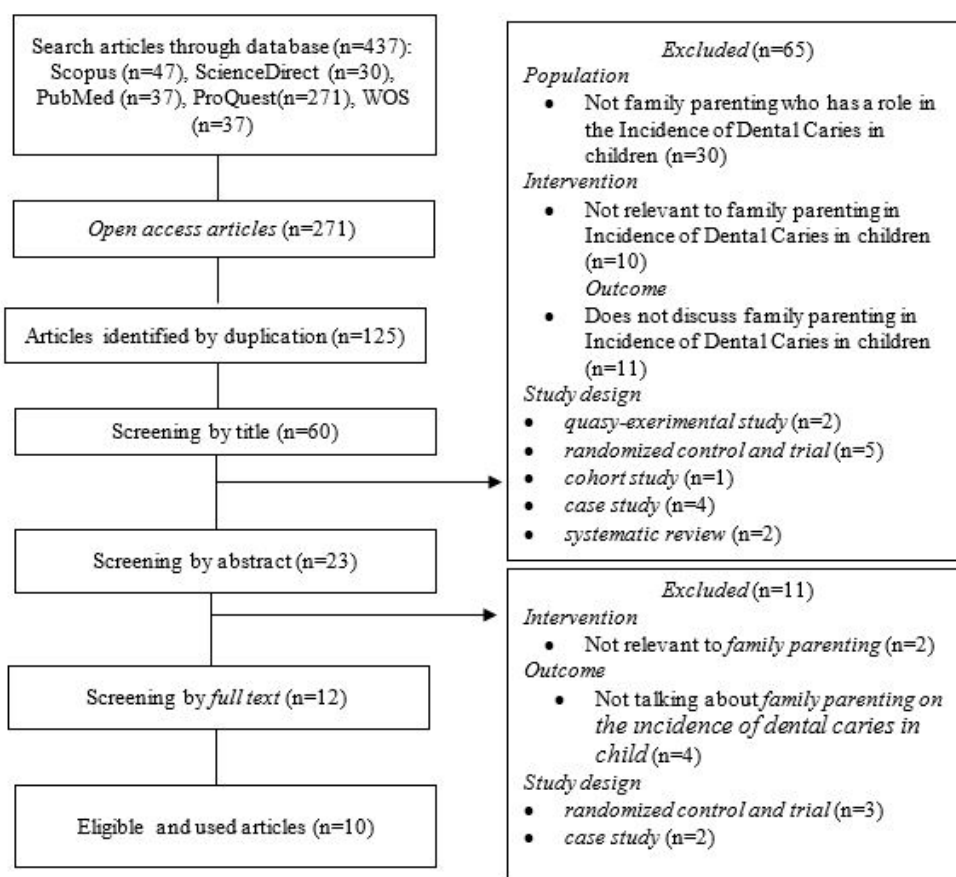


Fig. 1 : Diagram flow study.

**Assessment of study quality and risk of bias**

The method used to analyze and prevent the this study’s risk of bias is the Critical Appraisal Checklist from The Joanna Briggs Institute (JBI) for each article collected (n=10). The JBI Critical Appraisal served as the basis for the assessment list checklist for Qualitative study contains 10 questions while The JBI Critical Appraisal for Cross sectional study contains 8 questions with the criteria of “yes”, “no”, “not clear”, and “not applicable”. Each question that meets the “yes” criteria will earn one point and all other criteria are zero. Then each score obtained will be added up. The study is included in the inclusion requirements if it receives a research score of at least 50% and meets the critical assessment criteria with a cut-off point value that was agreed upon by the researcher. Studies with a score of <50% were excluded because they were considered low quality to avoid bias in the validity of the results and review recommendations. At the last screening, there were 10 articles that had a score of >50%, so they will be included and data analysis will be carried out.

**Data extraction and analysis**

Descriptive method is an analytical method used in this systematic review based on a predetermined theme. A narrative approach with the main objective

of analyzing parental care for prevalence of dental caries in children.

**RESULTS**

Research characteristics selected in this systematic review are multi-regional, namely 5 articles in India, 2 articles in Saudi Arabia, 1 article in Egypt, 1 article in London, and 1 other article in Singapore. Meanwhile, the characteristics of the respondents in this systematic review are mothers and fathers, families with preschool-aged children and families with school-age children.

The article search found 10 articles that were analyzed based on the topic, namely family care for prevalence of dental caries in children, as follows, a shown in Table II.

Based on the table of research results above, it can be grouped based on the specified theme, namely Authoritative, Authoritarian, Permissive parenting.

**Authoritative Parenting**

Levels of education, occupation, and wealth varied with parenting in this study, with a significant proportion of authoritative parents coming from

**Table II : Results of literature review**

| No        | Title and Author   | Method  | Result   |
|-----------|--|---|--|
| 1<br>(10) | <i>Parenting styles and preschool children's behaviour in a Saudi Arabian post-graduate dental setting</i><br>Arab Suadi               | Design: Cross-sectional survey<br>Sample: 282 healthy preschool children aged 3-6 years<br>Variable: parenting pattern with child's dental behavior<br>Instrument: Questionnaire<br>Analysis: Children's behavior was evaluated after dental prophylaxis and application of fluoride in the dental chair using the Frankl behavioral rating scale. Demographic data for families and children were evaluated through a questionnaire  | The results showed that two parenting styles were identified among Saudi parents, authoritative and permissive parenting styles. Parenting pattern correlates with parental dental anxiety and affects children's dental behavior. Clinically, interesting correlations were identified regarding factors influencing children's first dental visit behavior   |
| 2<br>(7)  | <i>Parenting Styles and their Influence on Child's Dental Behavior and Caries Status: An Analytical Cross-Sectional Study</i><br>India | Design: Cross-Sectional Analysis<br>Example: Children aged 3-7 years at the first visit to the dentist and 315 parents<br>Variables: Parenting, Child's Dental Behavior, Caries Status<br>Instrument: Parenting Style Dimension Questionnaire (PSDQ)<br>Analysis: their behavior was assessed using the Frankl behavioral rating scale. Their caries status was recorded using the DMFT/def index   | From 315 parents, 240 people showed authoritarian parenting, 45 people showed permissive parenting, and 30 people showed authoritarian parenting. Permissive parenting was associated with a four-fold increase in children's negative dental behavior and authoritarian parenting showed a twofold increase in children's negative behavior compared to authoritative parenting. Children of authoritarian and authoritarian parents showed less caries status and permissive parenting showed a threefold increase in caries status compared to authoritative parenting. |
| 3<br>(6)  | <i>The Role of Parenting Practices on the Parent Perceived Impact of Child Oral Health on Family Wellbeing</i><br>India                | Design: cross-sectional survey<br>Example: conducted among 1539 school-children in India<br>Variable: the relationship between parenting patterns and parents' perceptions of the impact of children's dental and oral health on family welfare<br>Instruments: short form FIS (Family Impact Scale), and PCRQ (parent-child relationship questionnaire)<br>Analysis: PCRQ factor analysis: 'Positive parenting' and 'Strengthening assertive parenting'. Intra-oral examination was performed on the child to assess the dental caries experience and gingival health status | Increased assertive parenting (B = 1.16) was associated with increased FIS scores indicating a higher detrimental impact of children's oral health on family well-being when parents used stronger assertive parenting practices. On the other hand, an increase in positive parenting (B=-1.27) was associated with a decrease in FIS scores, indicating a lower impact of children's oral health on family well-being when parents used more positive parenting practices.   |

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- 4 *Association between Parental Behavior and Child's Oral Health among 3-5-year-old Children in Bengaluru City*  
(11)  
India (Kota Bengaluru)
- Design: cross-sectional study  
Sample: 300 children aged 3-5 years  
Variables: socioeconomic status, dental history, oral habits, and oral hygiene practices  
Instrument: Questionnaire  
Analysis: WHO oral health pro forma (2013) was used to assess the oral health status of children. Chi-square, Kruskal-Wallis, and Mann-Whitneymu-tests and binary logistic regression were applied. Statistical significance was considered at  $P < 0.05$ .
- The majority of parents are authoritative (64.0%). The mean age of the children was  $4.15 \pm 0.74$  years. Sixty-one percent of children had caries experience. The permissive group had a higher mean dmft ( $4.25 \pm 3.43$ ) than the authoritarian ( $2.1 \pm 1.67$ ) and authoritative groups ( $1.51 \pm 1.94$ ). There is a relationship between parental behavior and dental and oral health status in children aged 3-5 years.
- 5 *The role of parental rearing practices and family demographics on oral health-related quality of life in children*  
(12) *comprehensive predictive model. Methods: Participants were 11- to 14-year-old children and their parents living in Telangana State, India (N = 1130)*  
India
- Desain: Studi potong lintang  
Sampel: 1130 Responden  
Variabel: Family Parenting Practices, Demografi keluarga dan kesehatan gigi dan mulut pada anak.  
Instrumen: Kuesioner orang tua, kuesioner anak, dan pemeriksaan gigi  
Analisis: Analisis regresi linier, deskriptif analitis dan SEM
- Parents with higher positivity ( $\beta = -0.106$ ) and lower affirmation strength maintenance practices ( $\beta = 0.103$ ) had children with better OHRQoL. Parenting patterns have no effect on children's dental and oral hygiene behavior. Children with malocclusion ( $\beta = 0.076$ ) and fluorosis ( $\beta = 0.38$ ) had lower OHRQoL. Family SES has a significant influence on children's oral hygiene behavior and oral hygiene status with children with higher SES showing better oral hygiene behavior and status. Children living in single-parent families reported poorer oral hygiene behavior ( $\beta = -0.048$ ) than those living in other types of families.
- 6 *Parenting and oral health in an inner-city environment: a qualitative pilot study*  
(13) *such as inner-city areas, where elevated levels of dental need are associated with lower uptake of dental care. Successful oral health promotion (OHP)*  
London
- Design: Qualitative  
Sample: 17 Old people (aged 18 years and over) who live in North Lambeth plantations, or its surroundings  
Variables: Parenting, oral health  
Instruments: individual semi-structured interviews and triad focus groups of up to three participants  
Analysis: All data were transcribed and analyzed using the 'skeleton' method. This iterative process required listening to the audio recording and reading the transcripts obtained from the first six interviews/groups.
- The findings suggest that these inner-city communities may contain sub-groups with contrasting perspectives on oral health and oral health behaviors; however, there is support for a systems approach to oral health promotion initiatives involving multiple health and social care services, including key roles for schools, and active engagement with first-time parents.

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- 7 *Parenting practices and oral health status in rural areas in Egypt: a household survey* D design: cross section  
 Example: k 190 households and 392 children  
 Variable: Parenting pattern, oral health status  
 (9) Instruments: Data collection was carried out through clinical examination and interview-based questionnaires on children  
 Mesir  
 Analysis: . Parenting practice was assessed using the abbreviated version of the Alabama Parenting Questionnaire (APQ) and oral health practice was assessed using the WHO child questionnaire form. Four linear regression models were used to assess the association between the four outcome variables (oral health indicators: (DMF, df, plaque and gingival index) and parenting practices and oral health behaviors (exposure) after adjusting for potential confounders, Wilcoxon paired t test and linear regression. . .
- 8 *Parenting practices and children's dental caries experience: A structural equation modelling approach* Design: Cross-sectional study  
 Sample: 1539 participants  
 Variable: Parenting pattern and child's dental caries experience  
 Instruments: questionnaires for parents, children and clinical examination of children's teeth  
 (8)India. Parents completed a questionnaire that consisted of questions related to socioeconomic status (SES)  
 Analysis: SPSS descriptive analysis, Root Mean Square Error of Approximation and structural equation modeling approach  
 India  
 Parents' positive oral hygiene behavior (b=0.18, P=0.009), and negative affirmation power (b=-0.06, P=0.041) were associated with children's oral hygiene behavior. Families who reported higher SES had children with less dental caries experience (b=-0.10, P=0.028) and better oral hygiene behavior (b=0.13, P=0.009). Parental assertion has an indirect relationship with dental caries experience (b=0.003, P=0.038).  
 Children have higher dental caries experiences when they live in families with lower SES and use stronger assertive parenting practices.
- 9 *The effect of parenting styles on enforcement of oral health behaviours in children* Design: Cross-sectional study  
 Example: 389 children  
 Variable: Parenting patterns and dental and oral health behavior in children. 389 children  
 Instruments: Questionnaires, and dental checkups  
 (14)child diet and oral hygiene practices. Child oral health was evaluated using Plaque Index (PI)  
 Analysis: STATA/SE 15 (StataCorp. 2017. Stata Statistical Software: Release 15. College Station, TX: StataCorp LLC), Fisher's exact test, Mann-Whitney U test, Logistic regression analysis.  
 Singapore  
 The results of the study were that authoritative parenting was associated with desirable oral hygiene practices and parental attitudes towards oral hygiene practices and preventive dietary behavior. Permissive parenting was associated with not brushing teeth before bed and less supportive parental attitudes towards dietary control, such as offering sweets/snacks in exchange for good behavior. Parenting style has an impact on actual oral hygiene practices, but not on dietary behavior. This relationship, coupled with the observed inconsistency between parental attitudes and actual dietary habits, may explain

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- 10 *Do Parenting Styles Affect Children's Oral Health in Saudi Arabia?* Design: Cross-sectional study  
Example: 282 parents  
Variable: Parenting and Children's Oral Health  
(15)  
Arab Saudi  
Instrument: The second questionnaire is the Parenting Style and Dimensions Questionnaire (PSDQ)[  
Analysis: . Descriptive statistics, Shapiro-Wilk test, Chi-square test, Simple linear regression analysis, logistic regression analysis.
- Two parenting styles were identified among Saudi parents; authoritative (94%, n = 265) and permissive (6%, n = 17). The majority of children brushed their own teeth (n = 130, 46.1%) and once a day (n = 163, 57.8%). There is a significant relationship between parenting and brushing time (P-value 0.016) with the amount of food consumed by children (P-value 0.031). Child age and oral hygiene scores were significantly correlated with dental caries (P-value <0.05). Two parenting styles were identified among Saudi parents. Parental parenting has an effect on children's dental and oral health but not significantly. Early childhood caries and moderate to poor oral hygiene are commonly detected in children. Clinically interesting correlations were identified regarding factors influencing children's oral health status.

a higher social class. In his study, Less than half of survey participants claimed to have visited the dentist, and on average were authoritative parents (11). Clear rules are established through authoritative parenting, and upheld by logic. They support children's independence by promoting two-way dialogue. Children in authoritative homes thus have happier dispositions, greater social skills, better emotional control, and higher coping mechanisms (7). Children of authoritative parents experience high amounts of warmth and control, which causes them to internalize or externalize issues less and display less behavioral issues (6) Parents who are more positive or authoritative when interacting with their children report that their children experience better dental health problems (12). Authoritative parenting is associated with a decrease in dental caries in children aged three to six years who come for the first visit to the dentist (9).

Positive or authoritative parenting Parents who report more assertive parenting have child with poorer oral hygiene behaviors. This demonstrates how coercive parenting can be method often fail to teach their children healthy habits (12). Authoritative parents protect their children's access to carcinogenic foods and have greater control over their children's diets. Authoritative parents take their children for more frequent dental checkups and have better oral and dental hygiene practices (15).

#### **Authoritarian parenting**

Authoritarian parenting is linked to less cooperative behavior and lower caries status in children. These kids' bad behavior can be related to their lack

of trust in people and their fearfulness. Children who grow up in Authoritarian environments frequently exhibit shyness, fear, and difficulties interacting with others. (7). Authoritarian parents have high standards and are less responsive to their children's needs and can be stressed about parenting more often than other types of parents. High-level neuroticism, a personality trait characterized by restlessness, anxiety, tension, and emotional instability, is said to be present in authoritarian parents. Assertive and forceful parents who exhibit this trait are unable to be attentive to their children's needs, and those who use this parenting approach frequently exhibit a strong desire for control and little affection (6). Children with authoritarian and authoritarian parents are asked to practice more regular because of the strict dental hygiene guidelines that characterize this parenting style. If there are strict rules made regarding oral and dental hygiene measures then children must comply with those rules. According to research, responsible parents help their children develop healthy dental hygiene habits like brushing their teeth regularly (11). Researchers found that authoritarian parents place less importance on dental health than other types of parents (14).

#### **Permissive Parenting**

Research from (10) found Because permissive parents have no control over their own behavior and the behavior of their children. Visits to the dentist are a source of anxiety triggers that require emotional control and self-regulation. Consequently, in contrast to authoritarian parents who are more in control, permissive parents are expected to exhibit

anxious behavior, Negative dental behavior is more prevalent in children of permissive parents than in children of authoritarian parents. Compared to children with authoritarian parents, children with permissive parents also experience more dental problems. The most detrimental dental behavior and greater caries status were found in kids of permissive parents. Permissive parents have been conceptualized like pampering and the owner of the house is their child, you are allowed to make your own rules. These youngsters are exceedingly picky and will act out when their demands are not met. Children of permissive parents can choose to misbehave and comfort their parents rather than being disciplined since they avoid conflict and always spoil them (7).

Children who grow up in permissive environments may have unrestricted access to cariogenic foods and beverages, as well as the freedom to choose whether or not to brush their teeth (11). In children aged 11 to 14 years, assertive parenting has been associated with increased rates of dental caries and severity of gingival bleeding (9). The level of aggressive parenting has an indirect correlation with more dental caries experience and negatively correlated with children's dental and oral hygiene behavior (12).

Permissive parenting was associated with giving candy/snacks as a reward for good behavior and a higher frequency of not brushing teeth before bedtime, permissive parenting is associated with higher frequency of not brushing teeth before bed, which is consistent with brushing your teeth without compulsion at night before going to bed. This contrasts with the apparent difference between parental beliefs and actual food practices associated with snacking. (14). Parents that are permissive are more tolerant of their kids' negative behavior, including their consumption of sugar. Unless they offer it as a reward for good behavior, parents tend to limit their children's access to a cariogenic diet (15).

## DISCUSSION

Based on the results of the analysis of the article above, it was found that several things in family care were related to the incidence of teething in children, namely authoritative, authoritarian, permissive parenting.

### Authoritative Parenting

Parenting is a series of interactions with children. Appropriate parenting is a factor that determines the independence of a child. Children imitate the behavior of their parents, especially when they feel that their parents are sensitive to their wishes and

feelings and teach them the consequences of their actions. Good child independence improves problem solving skills, including health problems. The most common mouth problem in young children is dental caries. Dental caries can cause malnutrition and interfere with child development. Because of their erratic movements, reflexes and stability, children are more susceptible to traumatic mouth injuries. Parents and home environment seem to influence the incidence of dental trauma in children. An interesting finding is that children's actual eating habits often do not reflect the parenting methods associated with views intended to enforce oral health behaviours. For example, even though authoritative parenting is related to parental control over the consumption of sweets and snacks, it does not mean reducing the frequency of eating. Research in the behavioral sciences shows that a person's attitudes do not always accurately anticipate their behavior, which helps explain this difference (14). Authoritative parenting style is heavily influenced by level of education, occupation and economy. Children in homes with authoritative care are happier, have better social skills, have better emotional control, and have higher coping mechanisms (7).

### Authoritarian parenting

Parents' behavior influences parenting style which can affect children's growth and development. Different children's habits are caused by different parenting styles, including tooth brushing behavior. Authoritarian parents have high standards and are less responsive to their children's needs and are often more stressed about parenting than other types of parents. Because of the strict rules that determine this parenting style, children with authoritarian parenting are required to practice dental hygiene more often. Children will follow strict guidelines for oral hygiene if regulated. According to research, authoritative parents can help their children develop healthy oral hygiene habits like regular flossing (11). Children with authoritarian parenting often experience depression, experience fear, shame, and lack of interaction with others due to high parental standards and high levels of neuroticism, a personality trait characterized by restlessness, anxiety, tension, and emotional instability said to be present in authoritarian parents. Parents who use this parenting approach often show a strong desire for control and little affection (6).

### Permissive Parenting

Permissive caregivers start from the attitude of parents who tend to let children act as they please, children are free to do what they want without parental supervision. The formation of children's oral self-care habits is influenced by parents (16). Frequency of not brushing teeth before going to



bed is associated with permissive parenting, which is consistent with disapproval of brushing teeth at night. This contrasts with the apparent difference between parental beliefs and actual food practices associated with snacking. This shows that brushing teeth before going to bed is a behavior that can be reported by parents with higher accuracy than snacking frequency. We further hypothesized that rather than withholding medication, parents may feel more comfortable adopting oral hygiene habits and perceive brushing as a “good” habit to adopt, which may conflict with the parental belief that a child’s nutrition should not be restricted to promote growth and development. . . development (14) .Parents with permissive parenting are often referred to as parents who spoil their children so that they are free to do what the child wants.

The limitation of this systematic review research is that the data are not representative so that it cannot be generalized considering that most of the research designs are cross-sectional studies that cannot explain in detail because the data generated are in the form of numbers.

## CONCLUSION

There are 3 types of family care to prevent dental caries, namely authoritative, authoritarian and permissive. Children of authoritative and permissive parents show worse dental behavior than children of authoritative parents. When compared with children of authoritative parents, children of permissive parents also show an increased caries status. Family parenting style that is more authoritative has a positive effect on oral health, especially in reducing the prevalence of dental caries in early childhood. The results of this study are expected to add insight and knowledge to readers regarding family care in helping prevent dental caries in children so that they can help prevent dental caries as early as possible in children in order to achieve optimal dental health.

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