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# Literature Review: Parental Behavior in the Habit of Brushing Preschool Children's Teeth Against Early Childhood Caries

**Culia Rahayu<sup>1</sup>, Fredy Mulyadi<sup>2</sup>, Hilmiy Ila Robbihi<sup>3</sup>, Yayah Sopianah<sup>4</sup>**<sup>1,2,3,4</sup>Jurusan Keperawatan Gigi, Poltekkes Kemenkes Tasikmalaya, Jl. Tamansari No 210, Kec. Tamansari, Kota Tasikmalaya, Jawa Barat 46115

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**ARTICLE INFO****Article history:**Received Oct 30, 2022  
Revised Nov 21, 2022  
Accepted Nov 02, 2022**Keywords:**Knowledge  
Skills  
Time  
Frequency  
brushing teeth  
early childhood caries

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**ABSTRACT**

Oral and dental health is a component of general health and is also an essential factor in the normal growth of children. Caries affecting infants, toddlers, and pre-schoolers describe a unique pattern of caries lesions called Early Childhood Caries (ECC). The purpose of this study was to describe parents' behaviour in brushing habits of preschool children against early childhood caries. This research is a literature review. The population in this study were 15,231 journals, both national and international, related to the behaviour of parents in brushing their teeth in preschool children against early childhood caries. The sample in this study was 15 journals published in 2015-2020. Based on the review literature on journals, it was found that the knowledge and skills of parents about the habit of brushing teeth, time and frequency of brushing teeth influenced early childhood caries in preschool children. Thus, the school should collaborate with the Puskesmas concerning efforts to improve children's oral and dental health, which includes counselling on how to brush teeth properly, when brushing teeth and routine check-ups at the Puskesmas or the dentist.

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**Corresponding Author:**Culia Rahayu  
Jurusan Keperawatan Gigi,  
Poltekkes Kemenkes Tasikmalaya,  
Jl. Tamansari No 210, Kec. Tamansari, Kota Tasikmalaya, Jawa Barat 46115  
Email: rahayuculia67@gmail.com

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## INTRODUCTION

As an investment for the development of socially and economically valuable human resources, health development seeks to raise public knowledge of the desire and capacity to live a healthy lifestyle to achieve the maximum level of public health. Articles 46 and 47 of the Law of the Republic of Indonesia No. 36 of 2009 state that to achieve the highest possible health status for the community, integrated and comprehensive health efforts are undertaken in the form of individual and community health efforts. Efforts to promote, prevent, treat, and rehabilitate health is structured in integrated, comprehensive, and sustainable activities. (Undang-undang Republik Indonesia, 2009).

Dental and oral health is a component of general health and an essential factor in the normal growth of children. Dental and oral health problems can affect child development and general body health and negatively impact the quality of life. The most common dental and oral health problem in Indonesian society is dental caries. Caries can occur in adults and in school-aged and preschool-

aged children (Winda et al., 2015). The condition of children's oral hygiene is worse, and children eat more food and drinks that cause caries than adults. Children generally like foods that contain sugar; if children consume too much sugar and rarely clean it, then their teeth will experience caries (Machfoedz & Zein, 2005).

Dental caries is a disease affecting many children and adults, both milk and permanent teeth. Children aged 6-14 years are a critical age group with special characteristics, namely the transition from milk to permanent teeth. (Suciari et al., 2016). Dental caries is an infectious disease that damages the tooth structure, and this disease causes cavities, causes pain, sleep disturbances, tooth loss, infection, various dangerous cases and even death. The cause of this disease is the consumption of sweet and sticky foods, being lazy or incorrect in brushing your teeth, lacking attention to dental and oral health, or even never having checked your dental health. (Sari & Yudhatama, 2017).

Caries that attack infants, toddlers, and preschool children, describe a unique pattern of carious lesions called Early Childhood Caries (ECC). Early Childhood Caries is chronic and progressive. The formation of caries is caused by the activity of microorganisms in fermented carbohydrates, characterized by the demineralization of hard tissue and damage to organic matter, which destroys enamel and dentin, so cavities appear. Caries begins with white carious lesions due to decalcification and develop into brown or black holes that erode and destroy teeth. Four main factors cause Early Childhood Caries. (Fajriani, 2011).

Several factors contribute to the problem of dental caries in preschool children, including a fondness for sweet foods such as candy and chocolate, a lack of dental and oral hygiene, and unhealthy habits such as eating without chewing, sucking candy, and drinking milk with a pacifier for an extended period. (Suciari et al., 2016). Individual demographic risk factors also affect caries risk, including age, gender and socioeconomic status. Caries can be prevented early by modifying risk factors (Yanti, 2012).

*Early Childhood Caries (ECC) are not entirely formed at one time; instead, it takes months or even years before they appear.* (Chu, 2006) ECC is a preventable disease; early detection and prevention of this disease are essential to reduce pain and help improve the growth and development of children in general. ECC significantly affects the general and oral health of children, as well as the quality of life of children (Jeffrey, 2016).

*In his research, the Global Burden of Disease Study 2016 stated that dental and oral health problems, especially dental caries, are a disease experienced by almost half of the world's population (3.58 billion people). Gum (periodontal) disease is the 11th most common disease in the world. Meanwhile, in Asia Pacific, oral cancer is the 3rd most common type of cancer* (Muslimah, 2020).

The World Health Organization (WHO) (2007) states that the incidence of dental caries in children has increased by 60-90%. In contrast, data from the Indonesian Dentists Association (PDGI) states that at least 89% of caries sufferers are children. Based on the health survey characteristics results, the prevalence of dental caries in toddlers aged 3-5 years is 81.7%. Prevalence of dental caries according to age group, namely three years old (60%), four years old (85%) and five years old (86.4%), thus the toddler age group is a group prone to dental caries (Suciari et al., 2016).

The 2018 Basic Health Research (RISKESDAS) results showed that 57.4% of the population stated that they had dental and oral problems, but only 10.2% received treatment from dental and medical personnel. Of the entire population, 88.8% experienced dental caries and 74.1% suffered from inflammation of the supporting tissues of the teeth. Even though 94.7% of the population brush their teeth every day, only 2.8% brush their teeth at the right time, namely in the morning after breakfast and before bed. (Muslimah, 2020).

The prevalence of caries or cavities in children and adults is also relatively high. The prevalence of cavities in early childhood is very high, namely 93%, meaning that only 7% of Indonesian children are free from dental caries. This number is still far from the target; 50% of children aged 5-6 years are free from dental caries. The average dental caries in children aged 5-6 years is eight teeth or more (Astuti & Rochmawati, 2018).

The dental and oral health status of the people in West Java is still not optimal. Many Indonesians complain of dental and oral problems, but unfortunately, not many seek help and receive treatment from health workers. More than 50% of the population in West Java with active caries or cavities has not been treated (Lidya, 2018). The 2019 Tasikmalaya City Health Office Dental and Oral Disease Report obtained data on a tooth decay rate of 6.29%, included in the very high category, with 9,350 pulpal/periapical diseases and 6,8635 cases of dental caries (Dinkes Kota Tasikmalaya, 2019).

Brushing teeth is a human behavior in cleaning teeth from food debris, done continuously. The habit of caring for your teeth by brushing your teeth at least twice a day before going to bed and after eating breakfast or breakfast, as well as the behaviour of eating sticky and sweet foods, can influence the occurrence of caries. Brushing teeth is a person's routine activity to clean all soft deposits and plaque on the surface of the teeth and gums correctly and adequately without damaging the surrounding soft tissue. The frequency and selection of tools and materials for brushing teeth must be considered carefully. (Faisal, 2015).

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The formation of attitudes and behaviour for children under five is strongly influenced by the closest environment, namely the family, especially parents (Andayasari et al., 2017). Parents' knowledge and education are very helpful in forming children's knowledge and behaviour towards maintaining dental and oral health. This is in line with research (Sari & Yudhatama, 2017). The severity of caries in children aged 2-5 years tends to increase in children with less maternal knowledge about oral and dental health. The behavior of parents who give their children bottle milk and other sweet liquids at bedtime, as well as sugar-containing baby food, frequent snacking, eating and drinking sweets before bed, lack of dental and oral health maintenance, and irregular tooth-brushing habits, can increase the risk of dental caries in children. (Anil & Anand, 2017). Through systematic literature reviews reviewed from various articles, an understanding will be obtained of how necessary parental knowledge is in getting used to brushing the teeth of preschool children.

## RESEARCH METHOD

The literature review contains descriptions of theories, findings and other research materials obtained from reference materials to serve as the basis for research activities. The report in this literature review is directed at compiling a clear framework of thinking about problem-solving previously described in the problem formulation. The research begins with a literature search interconnected with the research subject, which is the primary step for relevant information. This is useful for avoiding plagiarism. A literature study helps researchers find goals and explain how the research was carried out (Amelia et al., 2019). The number of articles with the keyword early childhood caries is 15,231 in national and international journals relating to parental behaviour in the habit of brushing teeth of preschoolers towards early childhood caries.

Article searches were carried out using Pubmed and Google Scholar databases. For each search in the database, several models of the exact keywords are used, including: (1) behaviour, (2) habits, (3) brushing teeth, (4) preschool children and (5) early childhood caries. These keywords are combined well with Indonesian and English using the conjunction "dan/and".

Inclusion criteria are the general characteristics of research subjects from a target population that will be extended and studied (Nursalam, 2015). The inclusion criteria in this journal search are: 1) This literature review uses literature published in 2015-2020. 2) Full text can be accessed in pdf

format and scholarly (peer-reviewed journals). 3) Research articles or articles that have been published discuss parental behaviour in the habit of brushing the teeth of preschoolers towards early childhood caries. 4) Quantitative and qualitative research reports related to parental behaviour in the habit of brushing teeth of preschoolers towards early childhood caries. The steps are problem identification, screening, quality assessment, and data analysis.

## RESULTS AND DISCUSSIONS

The determination of research to focus on parental behaviour in the habit of brushing the teeth of preschoolers towards early childhood caries within a specific period dramatically affects the number of articles obtained. The articles' determination was limited to research journals from 2016-2020. The data obtained was 198 from the PubMed and Google Scholar databases. After sorting the articles obtained based on (1) research articles or research articles that have been published and discuss parental knowledge in preschool-aged children's teeth brushing habits, (2) parental skills in preschool-aged children's teeth brushing habits, (3) brushing time teeth of preschool age children and (4) frequency of brushing teeth of preschool-aged children. The exclusion criteria in this journal search were: (1) The sampling technique was not random. (2) Journals in languages other than English and Indonesian. (3) Articles that contain a collection of original articles only. (4) Search for the year of journal publication more than five years ago (under 2016). The literature review on parental behavior in the habit of brushing the teeth of preschool children against early childhood caries, finally the articles obtained totalled 15 journals.

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**Table 1** Literature Review Search Results

No	Name	Introduction	Method	Result	Discussion
1	Sari & Yudhatama, (2017)	Parenting patterns that influence are food diet, a habit of drinking milk before going to bed, a habit of brushing teeth, and regular visits to the dentist. Parents' upbringing is very dependent on education, income, and the area where the person lives.	Analytic correlational research using a cross-sectional study design and a survey as a research instrument.	Sixty-one children had ECC, and 40 children did not have ECC. The Chi-Square and Multinomial Logistic Regression tests showed that the sub-variables, the frequency of parents giving sweet foods, the frequency of parents giving milk, and the frequency of parents guiding them to gargle, had a p-value <0.05.	The frequency of parents giving sweet foods, the frequency of parents giving milk, and the frequency of parents guiding them to rinse their mouths have an influence on the occurrence of ECC in children under 3-5 years old in

No	Name	Introduction	Method	Result	Discussion
					Purwosari Village, Surakarta.
2	Rompis et al., (2016)	Mothers' knowledge about children's dental health can be seen from several aspects, namely knowledge about the causes of dental health problems, the consequences of dental health problems, child dental care, food arrangements, and when to check children's teeth to the dentist.	This type of research is analytic with a cross-sectional design.	The results showed that the mother's knowledge of children's dental health in Kota Tahunan was in a suitable category, 93.8%, while in the wrong type, it was 6.1%. Examination of the severity of dental caries found a low severity category of 4.61%, a moderate severity category of 26.1%, a high severity category of 60%, and a very high severity category of 9.23%. The contingency coefficient correlation test analysis obtained a significance of 0.270 ( $> p = 0.05$ ), indicating a weak relationship.	There is no relationship between mothers' knowledge about children's dental health and the severity of caries in Kindergarten children in Tahunan City.
3	Virgianti, (2016)	Caries in children or early childhood caries (ECC) has a complex etiology. It is influenced by diet: breast milk or formula, food or drink containing sugar, frequent consumption of cariogenic food and drink between meals, and poor oral hygiene. The mother's role in meeting the child's food and consumption needs occurs while providing for the child's needs, which the mother's knowledge can influence.	Descriptive Research	Factors of the mother's habits regarding the child's diet, including adding sugar to the child's bottle, giving the child a bottle while sleeping, breastfeeding the child while sleeping, giving additional sticky and sweet foods, and brushing the teeth can influence the severity of the child's ECC.	Formula milk diet children experience the most severe type 3 ECC.
4	Mutiara, (2019)	ECC often occurs but receives less attention from parents, even though parents play an essential role in shaping behavior that supports or does not	<i>Cross-Sectional Design</i>	The prevalence of ECC in children aged 2-3 years in Padang City is 72.9%, with a def-t index of 3.76. Parents with a high level of knowledge, as much as 59.8%, and with a good	There is no significant relationship between parents' knowledge and actions with ECC. There is a significant

No	Name	Introduction	Method	Result	Discussion
		support children's dental and oral health.		attitude, as much as 84.1% and 63.6% have a good attitude toward children's dental and oral health. The analysis results between knowledge and ECC obtained a value of $p=0.339$ , the attitude of parents with ECC obtained a value of $p=0.005$ and the actions of parents with ECC obtained a value of $p=1.000$ .	relationship between parents' attitudes and ECC in Padang City children aged 2-3 years.
5	Delima et al., (2018)	Mother's knowledge is an essential factor in toddler health, and this is because mothers influence the child's education process from an early age. Parents, especially mothers, must accustom their toddlers to maintain oral hygiene by brushing their teeth regularly. The cleanliness and health of primary teeth often get less attention from parents, and this is because of the assumption that damage to primary teeth is not a problem and does not require treatment because permanent teeth will be replaced.	The method used is counseling regarding toddlers' dental and oral health, teeth brushing skills training, and games for toddlers.	The activity resulted in increased knowledge of 100% of participants from the target of 70%, and 70% of participants passed the skill test on how to brush their teeth.	By increasing the mother's knowledge and skills, it can be applied in everyday life so that it can improve the dental and oral health of toddlers
6	Palupi et al., (2017)	Knowledge of dental and oral hygiene and teeth brushing skills excellent and proper for mentally retarded children is still lacking even though mild mentally retarded children have levels of intelligence higher than the other degrees of retardation. Children with mental	Pre-experimental with the One Group Pretest Posttest research design.	There is a decrease in OHI-s of mentally retarded children before and after counseling on mental retardation nurses.	Counseling to mental retardation nurses is effective in improving children's oral hygiene mild mental retardation, which is characterized by a decrease in the OHI-s value of mild mentally retarded children after being given

No	Name	Introduction	Method	Result	Discussion
		retardation need a nurse to help maintain oral hygiene. Adaptive behavior is required by mentally disabled children mild to improve dental and oral health.			counseling on how to brush teeth by nurses
7	Keloay et al., (2019)	The prevalence of caries in children aged 5-9 years was reported to reach 92.6%, and the proportion of time to brush their teeth correctly was 1.4%. Efforts to control and prevent plaque formation can be carried out effectively and practically by brushing your teeth thoroughly and regularly.	This type of research is descriptive with a cross-sectional design.	The results showed that all subjects used the combined brushing technique. The most plaque index is in the moderate category. The mean plaque index value is 2.67.	The tooth brushing technique used by SD GMIM students in Tonselama is a combination technique with a plaque index belonging to the moderate category
8	Sukarsih et al., (2019)	Children who have a bad diet at the age of 3-6 years can cause caries so that at the age of 10 years, because of these bad habits, the fall of all baby teeth occurs in children aged ten years.	This type of research is a cross-sectional design.	The research results show that children aged 10-12 at SDN 59/IV Jambi City have good brushing skills and low caries.	There is a relationship between how to brush your teeth and the status of dental caries in students aged 10-12 years.
9	Husna, (2016)	According to the results of a screening conducted on 10 Kindergartens with the assistance of the Sungai Kakap Health Center, on average, early school children had caries, and even children as young as six years old had damage to their first permanent molars. And when asked about the time to brush their teeth, it was found that 80% of the children answered brushing their teeth twice a day, namely in the morning and	This type of research is explanatory research survey research with a cross-sectional approach	Statistical test results using Product Moment Correlations obtained $r = 0.580$ with a probability of 0.000 for the variable parental role with child behavior, $r = -0.501$ with a probability of 0.002 for the parental role variable with caries incident, and $r = -0.530$ Probability of 0.002 for child behavior variable with the incidence of caries, because the probability $<0.05$	There is a significant relationship between the role of parents and children's behavior in brushing their teeth with the incidence of caries in children aged 5-6 years

No	Name	Introduction	Method	Result	Discussion
		evening when bathing. In contrast, at night, before going to bed, many children did not brush their teeth. Some even answered that they do not brush their teeth when going to school. School.			
10	Kasuma et al., (2018)	Caries in school-aged children is associated with pain and loss of teeth, impaired growth, weight loss, and adverse effects on quality of life. The removal or removal of carious teeth can be a traumatic experience for children and sometimes leads to severe complications.	The methods used in this activity consisted of counseling/lectures, mass toothbrushes, dental and oral examinations, and medication	After conducting counseling and examinations on 180 students, it was found that 55% brushed their teeth twice a day, 35% once a day, and 15% brushed their teeth several times a week. As many as 79% of students brushed their teeth in the morning and evening, while only 21% only those who brushed their teeth in the morning and at night before going to bed. Based on the time of brushing their teeth, as many as 37% of students brush their teeth in the morning before eating, 13% of students brush their teeth in the morning after eating, 10% at night before going to bed, and 40% brushing teeth after an afternoon shower.	A decrease in the OHIS index can be seen, indicating that this activity can increase understanding and increase good behavior in maintaining oral health
11	Puspita & Sirat, (2017)	Improving dental and oral health is one of the efforts to maintain dental and oral health from an early age. The level of dental and oral hygiene can be measured by an index, the Simplified Oral Hygiene Index (OHI-S).	Descriptive Research	The results showed OHI-S with good criteria for as many as five people (14.7%), moderate criteria for 26 people (76.5%), and three people with inadequate criteria (8.8%). At the same time, students' tooth brushing behavior was included in the requirements that need guidance. Class VI students have the most	Tooth brushing behavior with the criteria of brushing skills needs guidance.

No	Name	Introduction	Method	Result	Discussion
				OHI-S criteria with moderate criteria,	
12	Nugraheni et al., (2019)	Dental and oral health problems that school-age children most often experience are dental caries. Dental caries is one of the dental and oral health problems. Dental caries occurs due to damage to the teeth' hard tissues, including enamel, dentin, and cementum.	This research is an observational study with a cross-sectional analytic design	Of the 84 respondents, 41.7% of students had terrible tooth-brushing habits, and 58.3% had good tooth-brushing habits. If it is described based on the criteria for brushing teeth quantity, time to brush teeth, and tools used, 36.9% of students brush their teeth not at the right time, namely in the morning after breakfast and at night before going to bed.	The prevalence of dental caries in elementary school-age children in the working area of the Kedungmundu Health Center in Semarang City reaches 53.6%. The variable of brushing teeth with dental caries showed an OR of 1.3, the variable of how to brush your teeth showed an OR of 1.5, the variable of eating cariogenic food showed a fisher's exact value of 1.2, and the variable checking your teeth regularly every six months showed an OR of 1,7. However, no statistically significant variables were found.
13	Utami, (2018)	Child dental caries is a significant problem in developing countries. The prevalence of dental caries in children aged 3-6 years in Yogyakarta City reaches 84.1%. Dental caries is a multifactorial disease, including host factors, agents, and the oral environment.	This type of research is observational with a case-control study.	The results of multivariate analysis showed that dental plaque was associated with dental caries status with OR = 4.3 and p = 0.015, salivary pH with OR = 6.2 and p = 0.002, and tooth brushing frequency with OR = 6.5 and p = 0.002. Dental plaque, salivary pH, and tooth brushing frequency are risk factors associated with dental caries status in preschool-aged children.	Tooth brushing frequency is the most critical risk factor for dental caries in preschool children.
14	Jumriani, (2018)	Caries damage problematic tooth tissue caused by acid	This type of research is an analytical survey with a research design	The results of the study using the Chi-square test found that factors	The most dominant factor related to caries

No	Name	Introduction	Method	Result	Discussion
		from bacteria present in a fermented carbohydrate. One of the factors that affect dental health in developing countries is behavior.	using a cross-sectional approach.	related to caries status were how to brush your teeth ( $p=0.006$ ), time to brush your teeth ( $p=0.016$ ), toothbrush replacement period ( $p=0.019$ ), and consumption of cariogenic foods ( $p=0.033$ ). Variables unrelated to caries status are tooth brushing frequency and dental check-up frequency.	status is how to brush your teeth
15	Aprinta et al., (2018)	Caries are the demineralization or destruction of the organic matrix of the tooth by a bacterial infection that produces lactic acid. Permanent first molars have the highest prevalence of caries among other permanent teeth.	The research design uses cross-sectional analytics.	There were 72 children (67.3%) with caries on the permanent first molars. The analysis test results were $p = 0.001$ for the relationship between tooth brushing frequency and the incidence of caries in the first permanent molars and $p = 0.896$ for the relationship between the frequency of consumption of cariogenic food and the incidence of caries in the first permanent molars.	There is a relationship between the frequency of tooth brushing and the incidence of caries in the first permanent molars, and there is no relationship between the frequency of consumption of cariogenic foods and the incidence of caries in the first permanent molars in elementary school children aged 8-12 years in Pertima Village, Karangasem, Bali.

One of the dental and oral health problems that often occur in children aged 1-5 years is ECC (Early Childhood Caries). ECC is caries affecting the smooth surfaces of primary teeth in children under six years old caused by lactic acid produced from the fermentation process of sugars by *Streptococcus mutans* and *Streptococcus sobrinus* bacteria. Several external factors such as economic level, knowledge, race, ethnicity, customs, habits, gender, and nutrition during pregnancy greatly influence the speed and severity of the development of ECC. (Vargas et al., 2014), Besides that, the parental skill factor regarding tooth brushing technique, time to brush teeth, and frequency of brushing teeth can also affect ECC.

#### Parents' Knowledge of Teeth Brushing Habits

Knowledge of the mother, who is the closest person to the child in health care, significantly influences the child's attitude and behavior (Natamiharja & Dewi, 2010). Kindergarten-aged children generally do not know and cannot maintain their oral cavity health, so parents are responsible for educating them properly.

Mother's knowledge is also based on several factors such as occupation, level of education, experience in caring for children, living environment, and economic status. One factor that influences it is the environment where the respondent lives. Proximity to urban areas makes it relatively easy for respondents to obtain information about children's dental health from the mass media, counseling, or information from health workers.

Research conducted by Rompis et al. (2016) in Tahuna showed that the average mother's knowledge was good regarding the questions asked in the questionnaire but did not have a significant effect on preventing child dental caries that GMIST Eklesia Tahuna Kindergarten had very high caries severity criteria compared to the other two kindergartens. In Tahuna City. In statistical analysis, it was found that there was no relationship between the mother's knowledge and the severity of caries.

The results of this study are different from the research conducted Mutiara (2019) said that the prevalence of ECC in children aged 2-3 years in Padang City was 72.9% with a def-t index of 3.76. Parents with a high level of knowledge, as much as 59.8%. Based on research results by Sukarsih et al. (2019), the level of dental health knowledge among students aged 10-12 years at SDN 59/IV Jambi City has high knowledge and low caries status. Based on the results of an interview with one of the children, they said that their parents always taught them to brush their teeth before going to bed and after eating. Besides that, they said that most teachers at school are often reminded to always brush their teeth after eating. The results of this study are supported by the results of research conducted by Miftakhun et al. (2016), who stated that the role of parents in maintaining dental health in children is significant because the higher the knowledge of parents, the lower the risk of children experiencing caries.

Mother's knowledge is an essential factor in toddler health, and this is because mothers influence the child's education process from an early age. Parents, especially mothers, must accustom their toddlers to maintain oral hygiene by brushing their teeth regularly. Because generally, children spend more time with their mothers. Generally, children spend more time with their mothers, so mothers can take the right approach to accustom children to maintaining healthy teeth and mouth.

#### **Parental skills on Tooth Brushing Techniques**

To avoid dental caries, it is necessary to minimize plaque formation on the tooth surface, either by preventing its creation or by periodically removing it. Plaque formation can be controlled and contained in a straightforward, efficient, and practical manner, namely by brushing your teeth thoroughly and consistently to remove plaque from all tooth surfaces, especially the interproximal surfaces, which are crucial for keeping healthy teeth and mouth. Plaque thickness interproximally, rough restorations, dental pits and fissures, and tooth crowding.

Combining horizontal (left-right), vertical (up-down), and circular (rotation) brushing techniques constitutes the brushing technique for teeth. The vertical brushing technique is a method of brushing teeth with an abrupt movement beginning with the upper jaw, where the action is from top to bottom, and continuing with the lower jaw, where the movement is from bottom to top. The horizontal technique involves cleaning teeth horizontally to the left and right. This procedure is typically advised for children, and the movement on the occlusal surface of the teeth is horizontal. The phonese (circular) technique consists of a brushing motion that rotates toward the teeth and tooth surface.

The research result Keloay et al. (2019) said that the tooth brushing technique using a combination technique was used by all subjects (100%). No subjects were using vertical, horizontal, or phone brushing techniques. Based on research conducted by Suyatmi et al. (2013), the Combination toothbrush method is the most effective in reducing plaque score. Experts also conclude that combining all existing techniques is the most effective way to brush teeth.

Sukarsih et al. (2019) research shows that the highest percentage, 76.9% of respondents, have bad teeth brushing skills with a deficient caries status category. The results of the analysis using chi-

square obtained  $\text{sig} = 0.013$  or  $p\text{-value} \leq 0.05$ , meaning that there is a relationship between teeth brushing skills and dental caries status.

### **Tooth Brushing Time**

The easiest way to maintain the cleanliness and health of your teeth and mouth is by brushing your teeth. Excellent and correct tooth-brushing behavior is carried out diligently, thoroughly, and regularly. Brushing your teeth is an essential routine in maintaining and maintaining healthy teeth from bacteria and food residue that sticks to using a toothbrush. Brushing your teeth is an effort to keep your teeth clean and healthy.

The results of the research conducted by (2017) stated that plaque affects dental and oral hygiene. Plaque growth is influenced by time and food, enough time for plaque development is obtained if someone ignores dental and oral hygiene measures, while sweet foods can affect plaque growth. Thirty-four students (100%) behaved in brushing their teeth with the criteria of needing guidance, and this is probably because all respondents had improper brushing behavior, seen from the technique or method of brushing their teeth, tools for brushing their teeth, the timing of brushing their teeth was not correct.

This follows the opinion Notoatmodjo (2012), who states that three factors influence behavior, namely predisposing factors (predisposing factors) are affected by knowledge and attitudes of the community towards health. These supporting factors include the availability of facilities and infrastructure or health service facilities, driving factors (reinforcing factors) have factors attitudes and behavior of community leaders and religious leaders, and attitudes and behavior of officials, including health workers. These three factors affected the tooth brushing behavior of class VI SD No. 5 Pekutatan Pekutatan District, Jembrana Regency, in 2016.

Nugraheni et al. (2019), 41.7% of students had terrible tooth-brushing habits, and 58.3% had good tooth-brushing habits. If described based on the criteria for brushing teeth quantity, time to brush teeth, and tools used in brushing teeth, 36.9% of students brush their teeth not at the right time, namely in the morning after breakfast and at night before going to bed. As for the quantity criteria for brushing teeth and the tools used for brushing teeth, most of the students already have good habits related to this. This shows that there is still a need for information and education for students so they can change these habits to prevent dental caries.

The best time to brush your teeth is in the morning and before bed at night. In the morning, brushing your teeth before eating and 30 minutes eating and brushing your teeth before eating aims to reduce the potential for mechanical erosion on demineralized tooth surfaces, and brushing your teeth after eating aims to clean food residue on tooth surfaces and prevent plaque formation. Brushing your teeth at night before going to bed aims to avoid the interaction of bacteria with food residue that is still attached due to decreased saliva production during sleep so that it cannot clean the oral cavity naturally.

### **Tooth Brushing Frequency**

Arinta et al. (2018), on the tooth brushing frequency, 74 children, or 69.2% of children, brushed  $\geq 2$  times a day, and the remaining 33 children, or 30.8% of children, brushed their teeth  $< 2$  times a day. Samples who brushed their teeth  $\geq 2$  times a day, on average, brushed their teeth in the morning and the evening when bathing. However, some samples brush their teeth in the morning when bathing and at night before going to bed. While the samples brushed their teeth less than two times a day and only brushed their teeth in the morning or evening when bathing. The analysis results regarding the relationship between tooth brushing frequency and the incidence of caries on the first permanent molars in elementary school children aged 8-12 years in Pertima Village, Karangasem, Bali, statistically showed a significant relationship.

Analysis of the relationship between the frequency of consumption of cariogenic foods and the incidence of caries on the first permanent molars in elementary school children aged 8-12 years in Pertima Village, Karangasem, Bali, statistically shows no relationship. These results were also obtained in a study by Rosdiana (2015), which reported no effect between the frequency of cariogenic

food consumption and caries status, with a significance value of 0.11. Research conducted by Perillo et al., (2016) also reported that there was no effect between cariogenic food consumption and caries status with  $p = 0.1$ . In their study, Kumar et al., (2014) also reported no relationship between the incidence of caries of the first permanent molars with the frequency of consumption of cariogenic foods or foods containing sugar.

Several factors influence this study's results, including the time of consumption, the type of food consumed before the cariogenic food, and the relationship between the frequency of tooth brushing and the frequency of consumption of cariogenic food. Consuming cariogenic foods during main meal times, namely at breakfast, lunch, and dinner, can reduce the risk of caries because, during main meal times, good saliva production is produced to help clean residual sugar or food on the teeth.

## CONCLUSION

Based on the findings of a literature analysis of national and international journals concerning the description of parental conduct in the habit of tooth-brushing among preschool-aged children regarding early childhood caries, the following conclusions can be drawn. 1) Early childhood caries in pre-school-aged children are influenced by a parental understanding of teeth brushing routines. The ability of parents to properly brush their children's teeth affects dental caries in preschool-aged children. The amount of time preschool-aged children spend brushing their teeth influences the incidence of tooth decay in early childhood. 4) The frequency of tooth brushing influences early childhood caries in preschool-aged children

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