**Research Articles**

**THE RELATIONSHIP OF MOTHER'S BEHAVIOR TOWARDS CHILDREN'S DENTAL HEALTH MAINTENANCE AND THE INCIDENT OF EARLY CHILDHOOD CARIES (ECC)**

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**Abstract**

General health is influenced by dental and oral health, which is an essential component of it. Toddlers experience tooth decay more quickly than adults do. This is because the enamel on freshly erupted teeth is still developing and is therefore more prone to caries. Aside from that, another common poor habit is parents ignoring their kids' bad habits by drinking irresponsibly and for extended periods of time from bottles. Early Childhood Caries is defined as having one or more teeth that are damaged (having cavities or not) and tooth loss on the surface of primary teeth caused by caries or fillings in children 71 months of age or younger. Children's oral and dental health is significantly influenced by the actions of their parents, particularly mothers. The state of mothers' and their children's oral health is significantly correlated.This study intends to ascertain if maternal conduct with regard to preserving the dental health of her offspring and the frequency of Early Childhood Caries (ECC) are related (Review in Mannanti Village, Sinjai Regency). This study combines a cross-sectional analytical research design with a correlative descriptive research design. The Spearman correlation test is the statistical method employed. Maternal conduct and the preservation of children's dental health are significantly correlated, as indicated by the Spearman rank correlation test results, which had a p-value of 0.000, which is less than 0.05 (p-value <0.05). Based on the study's findings, it can be said that early childhood caries (ECC) incidence and mother behavior toward preserving her kids' oral health are related (Review in Mannanti Village, Sinjai Regency).

**Keywords**: Behavior, Caring for Children's Dental Health, Early Childhood Caries

**INTRODUCTION**

General health is influenced by dental and oral health, which is a basic component of overall health. According to experts, it's an oral and dental illness is a behavioral disease or a disease that is directly related to a person's behavior,

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the factor that causes an individual's dental and oral health-related conduct is the source of dental and oral health issues. Health behavior encompasses various knowledge domains, the realm of health behavior pertaining to dental and oral health includes attitudes and actions.1

Caries or cavities are among the dental and oral health issues that children worldwide, particularly in poor nations like Indonesia, frequently face. Caries begins with the dissolution of enamel which is caused by the formation of an acidic substrate by microbes which will cause the destruction of the organic components of the tooth.2

The condition of one or more damaged teeth and missing teeth owing to caries is known as Early Childhood Caries (ECC), according to the American Academy of Pediatric Dentistry (AAPD). ECC is a chronic illness that exclusively affects children's milk teeth up to 71 months of age. According to WHO data from 2018, between 60% and 90% of caries cases include youngsters. The prevalence of ECC in Indonesia in 2018 was 94.3%. In Indonesia, ECC cases are still considered very high, and there is even a tendency to increase from year to year.3

Tooth decay in children occurs more quickly compared to adult teeth, this is because newly erupted tooth enamel is more susceptible to caries because the maturation process is not yet complete. Poor oral hygiene causes decay of milk teeth in children. The quality of permanent teeth in youngsters is largely influenced by the state of their milk teeth that will grow later. Apart from that, a bad habit that often occurs is that parents often ignore their children's habits by consuming bottle milk for a long time and inappropriately. This can trigger Early Childhood Caries.2*,*3

Parents, especially mothers, need to follow their children's intellectual development so that children can easily understand and learn. Mothers with low knowledge, lack of facilities, and lack of motivation for children regarding dental and oral hygiene can raise a child's risk of dental caries because they are predisposing, supporting, and driving variables for behavior that undermines children's oral and dental hygiene.4

Children's oral and dental health is significantly influenced by the actions of their parents, particularly mothers. There is a strong correlation between a mother's and her child's oral and dental health, this was revealed by Laksmiastuti in her research. Children usually use their mother as their role model in their daily activities.5

The Indonesian Dentists Association (PDGI) states that communication between kids, parents, and dentists is essential to preserving kids' dental health. It is hoped that parents will also play a role in monitoring their children's dental hygiene by teaching them how to wash their teeth properly. Dental health education must be provided to children as early as possible so they can know how to keep healthy teeth.⁶

The age-specific frequency of dental caries for Basic Health Research (Riskesdas, 2018) is 81.5% for ages 3-4 years, 92.6% for ages 5-9 years, 73.4% for ages 10-14 years, 15-24 years age 75.3%, at age 25-34 years 87.0%, at age 35-44 years 92.2%, at age 45-54 years 94.5%, at age 55-64 years 96.8% and at age 65+ years 95.0%.7

Several studies conducted still show that dental and oral maintenance is still low, especially in children. This is supported by the active caries rate in South Sulawesi which reached 66.7%. According to the findings of Nauval's research, children in Sinjai received the majority of medical care. The Riskesdas data release findings demonstrate the appropriate behavior of brushing teeth in children over 10 years old, Kab. Sinjai at 11.9%. Meanwhile, the rest were guilty of brushing their teeth or around 88.1%. Wrong behavior of brushing teeth in Kab. Sinjai can be called the backbone that causes tooth and mouth damage. Various sources say that the wrong behavior of brushing your teeth is one of the causes of tooth and mouth damage.8

Mannanti Village, Sinjai Regency is one of the villages where the distance from the village to the district capital is around 25 km. The distance from Mannanti Village from Makassar city is around 200 km or around 5 hours if traveled by vehicle. Mannanti Village has 1 health center and medical equipment, especially dental equipment, at this health center is still very limited. The prevalence of caries is also quite high in this village and prevention of disease, especially in children's teeth, still escapes the attention of parents. Parents often ignore the health condition of their children's teeth so that if a child has unhealthy teeth, their growth process will be disrupted.9

Children's maintenance of dental health is influenced by their mothers' knowledge, and dental caries is more common in children whose mothers have low levels of knowledge. Mothers were chosen as samples by the researchers because of how strongly parents impact children. Thus, it is crucial that mothers in particular behave in a way that preserves their children's oral and dental health from an early age to avoid diseases that interfere with children's growth and development.10

Researchers chose the research location in Mannanti Subdistrict, Sinjai Regency because from the community, particularly moms, demonstrated the degree of behavior in preserving their dental and oral health, according to the findings of earlier research was still very low, and the wrong behavior in brushing their teeth in the Regency. Sinjai which causes tooth and mouth damage often occurs, especially in children. Thus, researchers are interested in conducting research regarding The association between early childhood caries incidence in Mannanti Village, Sinjai Regency, and mother conduct toward preserving her children's dental health.

**MATERIALS AND METHODS**

October–November 2023 saw the conduct of this study in Mannanti Village, Sinjai Regency. This kind of study uses a cross-sectional analytical research approach and is descriptive-correlative.All moms with toddlers and toddlers with carious teeth made up the study's population.

The technique used to determine this sample uses Purposive Sampling, that is, sampling is carried out in accordance with the required sample requirements. The Slovin formula was used to determine the sample size, and a sample size of 60 mothers and 60 toddlers. The research instruments used were filling out questionnaires carried out on mothers and checking Early Childhood Caries using the def-t index on children who met the research criteria. The questionnaire distributed to respondents had previously been tested for validity and reliability using Cronbach's Alpha. The reliability test computations indicate that the questionnaire has a Cronbach's alpha score of 0.874, indicating its dependability. A series of questions about mother behavior with regard to toddlers' teeth and oral health are included in the questionnaire which are arranged in a structured manner so that respondents can easily understand the meaning of the questions stated in the questionnaire.

Mothers with children under five and those with early childhood caries who were present and willing to participate in the study's questionnaires met the inclusion requirements. Children who didn't cooperate were the study's exclusion criterion. Tests for Spearman correlation were utilized in data analysis. The Indonesian Muslim University Research Ethics Committee gave its clearance for this study (KEP) Number 550/A.1/KEP-UMI/XI/2023.

**RESULTS**

Studies have been done that showThe association between early childhood caries (ECC) incidence and maternal conduct toward preserving children's dental health is the subject of the title. Include 60 moms and 60 children in the study to verify the def-t index. The research's findings are presented in the table below:

**Table 1. Distribution and Frequency of Respondents based on Mother's Behavior towards Caring for Children's Dental Health in Mannanti Village, Sinjai Regency**

|  |  |  |
| --- | --- | --- |
| Mother's Behavior Towards Maintaining Children's Dental Health | n | % |
| Poor | 0 | 00,0% |
| Fair | 44 | 73,3% |
| Good | 16 | 26,7% |
| Total | 60 | 100,0% |

*(Good Category = “>30”, Fair Category = “20-30”, Poor Category = “<20”)*

The frequency distribution of respondents in Mannanti Village, Sinjai Regency, based on mothers' practices for preserving their kids' dental health, is displayed in Table 1. Three categories—"good," "adequate," and "poor"—are used. 44 responders (73.3%) fell within the area of pediatric dentistry health maintenance behavior of "fair", while 16 respondents (26.7%) were in the "good" category of children's dental health maintenance behavior. This shows that the majority of respondents have their children's dental health maintenance behavior in the "sufficient" category.

**Table 2. Distribution and Frequency of Respondents based on the Description of Early Childhood Caries (ECC) in Mannanti Village, Sinjai Regency**

|  |  |  |
| --- | --- | --- |
| **Def-t Assessment Criteria** | **n** | **%** |
| Very low | 0.0 – 1.1 | 16 | 26.7% |
| Low | 1.2 – 2.6 | 9 | 15.0% |
| Enough | 2.7 – 4.4 | 13 | 21.7% |
| High | 4.5 – 6.5 | 7 | 11.7% |
| Very high | > 6.6 | 15 | 25.0% |
| Total | 60 | 100.0% |

The frequency distribution of responses according to the Early Childhood Caries (ECC) description is displayed in Table 2. The def-t index uses five parameters to determine a patient's caries status: very low, low, fair, high, and very high. Respondents who had "very low" caries status were the largest in this study, namely 16 toddlers (26.7%). Meanwhile, respondents who had "low" caries status were 9 children under five (15.0%). As for respondents who had "sufficient" caries status, there were 13 children under five (21.7%). Furthermore, respondents who had "high" caries status were 7 toddlers (11.7%), and respondents who had "very high" caries status were 15 toddlers (25.0%).

**Table 3.Distribution and Frequency of Respondents based on Early Childhood Caries (ECC) Types**

|  |  |  |
| --- | --- | --- |
| **Types of Early Childhood Caries (ECC)** | **n** | **%** |
| Type 1 (Mild to Moderate) | 25 | 41.67% |
| Type 2 (Moderate to Severe) | 13 | 21.67% |
| Type 3 (Severe) | 22 | 36.67% |
| Total | 60 | 100.00% |

The frequency distribution of respondents according to Early Childhood Caries (ECC) types is displayed in Table 3. Early Childhood Caries (ECC) come in three varieties: type 1 (mild to moderate), type 2 (moderate to severe), and type 3 (severe). Respondents who had Early Childhood Caries (ECC) "type 1 (Mild to Moderate)" were the most numerous in this study, namely 25 toddlers (41.67%). Meanwhile, respondents who had Early Childhood Caries (ECC) type "type 2 (Moderate to Severe)" were 13 children under five (21.67%). As for respondents who had Early Childhood Caries (ECC) which was "type 3 (Severe)", there were 22 children under five (36.67%).

**Table 4. Relationship between maternal behavior towards maintaining children's dental health and the incidence of early childhood caries (ECC**

|  |  |  |
| --- | --- | --- |
|  | **Def-t Assessment Criteria** |  |
| **Mother’s Behavior Towards Maintaining Children’s Dental Health** | **Very Low** | **Low** | **Enough** | **Tall** | **Very High** | **Total** | **Correlation Value** | ***p-value*** |
|  | **F** | **%** | **F** | **%** | **F** | **%** | **F** | **%** | **F** | **%** | **F** | **%** |  |  |
| **Poor** | 0 | 0,0% | 0 | 0,0% | 0 | 0,0% | 0 | 0,0% | 0 | 0,0% | 0 | 0,0% | 0.518 | 0.000 |
| **Fair** | 16 | 26,7% | 8 | 13,3% | 10 | 16,7% | 4 | 6,7% | 6 | 10,0% | 44 | 73,3% |
| **Good** | 0 | 0,0% | 1 | 1,7% | 3 | 5,0% | 3 | 5,0% | 9 | 15,0% | 16 | 26,7% |
| **Total** | 16 | 26,7% | 9 | 15,0% | 13 | 21,7% | 7 | 11,7% | 15 | 25,0% | 60 | 100,0% |

The findings of the association between early childhood caries (ECC) incidence and maternal conduct toward preserving children's oral health are displayed in Table 4. The results showed that respondents with adequate maternal behavior had most of the def-t in the very low category with 16 incidents (26.7%). Meanwhile, respondents with good maternal behavior category had most of the def-t in the very high category with 9 incidents (15.0%). This shows that adequate maternal behavior will influence the preservation of kids' oral health and the early childhood caries (ECC) risk in kids younger than five.

**DISCUSSION**

The Spearman test correlation or relationship test results indicate a correlation value of 0.518, falling within the strong correlation category. The review conducted in Mannanti Village, Sinjai Regency, revealed a strong link between the incidence of Early Childhood Caries (ECC) and maternal behavior towards maintaining the dental health of their children. The p-value of 0.000 is smaller than 0.05 (p-value < 0.05). Therefore, it can be said that toddlers' incidence of early childhood caries (ECC) decreases with the mother's action toward preserving her children's dental health.

Mothers' actions in preserving their kids' dental health fall into the largest category, which is sufficient. The activities of kids who can purchase their own snacks without parental supervision and the absence of maternal control over preserving kids' dental health are the root causes of this, as they might result in Early Childhood Caries (ECC). Adequate maternal behavior

by parents will have a significant impact on their children's oral and dental health as well as the process of developing behavior and habits given to children in maintaining healthy teeth and mouth.

The results of the survey in this research show that the behavior of mothers who play the role of caregiver, supervisor and encourager in maintaining children's dental health is sufficient. In this case, maintaining and raising parents' especially mothers' awareness of the significance of preserving the oral and dental health of their toddlers is imperative.

The Spearman test results indicate a p-value of 0.000, which is less than 0.05 (p-value < 0.05) for the correlation or association test. Thus, (Ha) is acknowledged, indicating a correlation between the occurrence of early childhood caries (ECC) and maternal conduct toward preserving her children's dental health.

Children frequently have dental and oral health issues; this is a result of parents, particularly moms, not giving their kids enough attention. In 2018, 94.3% of children have Early Childhood Caries (ECC) in Indonesia and is increasing from year to year. Researchers conducted research on maternal behavior towards maintaining children's oral and dental health with the incidence of Early Childhood Caries (ECC) in Mannanti Village, Sinjai Regency because the area is quite far from the district capital and provincial capital, has 1 health center and medical personnel. and dental medical equipment is still very limited. In Sinjai, dental caries is also highly common, particularly in young children (0–5). Maternal conduct has a major association with the child's dental and oral health, so it is crucial to understand the mother's behavior in preserving the child's oral and dental health from an early age.

According to Notoatmodjo's thesis, a person's conduct can be shaped by a number of circumstances, including driving, supporting, and predisposing influences. The results of research from Ajeng Nindya state that the better a person is at absorbing information, the more influence it will have on the formation of new behaviors that are shown to be healthier, such as information on maintaining oral and dental health. A mother's good behavior in carrying out an action will be influenced by the level of knowledge the mother has regarding maintaining oral health. For example, mothers who always look for information related to maintaining dental health or share dental and oral health with an expert such as a dentist, this is evidence that the mother has a positive attitude in responding to problems that occur with children's dental health. 11,12

According to Emini, the factors that influence the incidence of Early Childhood Caries (ECC) are maternal habits that are not good for maintaining children's dental health. The mother actually understands that before going to bed the child should brush his teeth, but every time he is asked to brush his teeth the child gets angry and in the end the mother lets the child sleep without brushing his teeth first. Another mother's habit is the habit of snacking and consuming sweet foods and drinks. When the mother consumes these foods and drinks, the child automatically consumes them too. The health status of a child's teeth really depends on the parenting style applied by the mother. According to Purwaningsih, the role and behavior of the mother is very necessary in guidance, understanding, reassurance, and provision of facilities are necessary to enable the youngster to maintain oral hygiene in the future. 13

The idea of health behavior proposed by Widastra and Anggraini and backed by Lawrence Green's theory. Both behavioral variables (behavioral causes) and non-behavioral factors (non-behavioral causes) have an impact on an individual's or society's health. Three factors determine behavior itself: the socioeconomic background that influences changes in behavior, predisposing factors (knowledge, attitudes, beliefs, values, and behavior), and supportive factors (physical environment, availability of facilities and health care, etc.). Driving forces can be seen in the attitudes and actions of public servants such as health workers, as well as in the families, friends, and teachers who serve as role models for community behavior. 14

This is in line with Cynthia Angelica's research which shows that there is an influence of highly educated mothers on the def-t index in children ages 4-5 at Santa Maria Kindergarten in Cirebon City; maternal conduct also has an impact on the def-t index in children ages 4-5 at Santa Maria Kindergarten in Cirebon City. This is due to the fact that a mother's use of children's oral health services reduces her child's chance of developing dental caries. Children are more likely to develop dental caries if their mothers use children's dental health programs poorly because children under five still have an attitude of dependence on the mother, so the mother plays the biggest role in maintaining the child's dental health. 15

Reca's study revealed that, out of the 60 moms who had a poor maternal role, 29 individuals (48.8%) had 23 children (38.3%) with dental caries statuses in the very high group following examination. The mother's function and the child's dental caries status are related, according to the chi-square test results, with a p-value of 0.000 (p<0.05). This is due to the fact that efforts to stop the rise in children's dental caries status have not been successful due to a lack of maternal support. 16

Suwarsono's research indicates that the alternative hypothesis (Ha) is accepted, i.e., there is a correlation between the amount of dental caries in children enrolled in Nurus Sunnah Islamic Kindergarten and the mother's role in preserving oral health. This is in line with research by Delviana Nurkamiden, who found that the significance of the study results was 0.000 ≤𝑎(0.05). As a result, there is a significant correlation between the incidence of dental caries in preschoolers at Mawar Kindergarten (TK) and the role that parents play in oral and dental hygiene, with the latter showing a very high rate of dental caries at 10 (45.6%).17.18

The findings of this study differ from those of Wulandani Liza Putri's research, which found no correlation between the incidence of early childhood caries (ECC) in PAUD students in Padang Timur District and mothers' attitudes, behaviors, and level of knowledge about maintaining their children's dental health. Researchers discovered a link between mother conduct for her children's dental health and the frequency of Early Childhood Caries (ECC) in Mannanti Village, Sinjai Regency, which has adequate maternal behavior and the incidence of Early Childhood Caries (ECC) is increasing. This is caused by the mother's behavior being based on habits or traditions, not knowledge which should be the main basis for maintaining good children's dental health.19

The study's findings indicate a correlation between mothers' dental health-promoting behaviors and the prevalence of early childhood caries (ECC) (review in Mannanti Village, Sinjai Regency). This is because her child's dental and oral health will be well-maintained if the mother behaves well, and vice versa if the mother behaves poorly, her child's dental and oral health will likewise be poorly-maintained.

**CONCLUSION**

The study's findings indicate a correlation between mothers' dental health-promoting behaviors and the prevalence of early childhood caries (ECC) (review in Mannanti Village, Sinjai Regency).

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