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ORIGINAL ARTICLE

Differences in Early Childhood Caries Status on Parental Stress Levels and Socioeconomic Status in Makassar City, Indonesia, During the COVID-19 Pandemic

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ABSTRACT

Objective: To analyze the differences in early childhood caries status on parental stress levels and socioeconomic status in Makassar City, Indonesia, during the COVID-19 pandemic. **Material and Methods:** This type of analytical observational study with a cross-sectional design was conducted in North Rantepao, Toraja City, South Sulawesi Province, Indonesia. The research subjects of this study were parents who met the criteria, were willing to participate in the study, and had children aged 6-17 years. The questionnaire instrument with the criteria for assessing children's dental and oral health was assessed based on parents' perceptions. Each item is rated on a scale from 1 (never) to 5 (always). Then the total score was divided into three categories, namely low (score 3-6), moderate (score 7-10), and high (score 11-15). Comparative test analysis using Chi-Square test. **Results:** Parents with high-stress levels had more children with poor oral health. There is a significant difference according to the level of stress and socioeconomic status of the parents. **Conclusion:** There is a significant difference between caries status in early childhood based on socioeconomic status and parental stress level.

Keywords: Dental Care for Children; Parent-Child Relations; Stress, Psychological; Socioeconomic Factors.

Introduction

Early childhood caries (ECC) is defined as the presence of one or more carious, missing (due to caries) or filling tooth surfaces in primary teeth in children 71 months of age or younger [1,2]. According to the 2015 FDI World Dental Federation, risk factors that influence the development of ECC include individual, family, and environmental factors [3].

ECC is associated with other health problems, ranging from localized pain, infection, abscess, difficulty chewing, malnutrition, gastrointestinal disturbances, and difficulty sleeping [2]. Dental caries in populations with higher burdens is not evenly distributed in lower socioeconomic groups. Several attempts have been made to allocate resources to those who need them most; there is a need for an approach to caries risk monitoring [4].

Dental and oral diseases are included in the top 10 list of diseases that most Indonesian people complain about [5]. The main problem in dental and oral health is dental caries. These problems are caused by poor oral health. Therefore, monitoring the development of oral disease is very important for children's health [6].

The main concern is the increasing number of people suffering from caries, an increasing number of caries in children, and at an early age [4]. The main concern is the increasing number of people suffering from caries, an increasing number of caries in children, as well as at an early age. Dental caries in primary teeth is one of childhood's most common oral diseases [7].

The problem of high caries rates in children is strongly influenced by the role of parents, such as income and parental education. These factors affect health status because meeting the needs of life and getting the desired health service place. Therefore, it occurs more often in groups with high income and education compared to groups with low income and education [8].

Healthy living behavior can be influenced by a person's socioeconomic status (PES). Several factors that influence PES are employment, education, income, and the number of family members. Work determines PES status because, from the job, all needs will be fulfilled. The family is the initial basis for building a wider PES life for the better, where the family's active role in the development of a child is needed in providing basic education, attitudes, and basic skills, complying with regulations, and instilling habits [9,10].

Based on Basic Health Research (Riskesdas) in Indonesia, the Indonesian population with dental and oral health problems in 2013 and 2018 increased from 25.9% to 57.6% [8,11]. In addition, the pattern of visits to the dentist is also consistent with socioeconomic status, even with access to the same dental care. Several studies have assessed the role of parental psychosocial factors in the oral health of children and adolescents [12].

Parents have an important role in maintaining children's dental health. The results of a study suggest that parental psychosocial factors that have been shown to impact children's oral health negatively include maternal depression and stressful parents. Parents' concern for children's dental health can be seen through their attitude and concern for children's dental health [13].

Stress levels in the elderly have been implicated as a predictor of oral health. However, these studies have focused more on young children and understanding how parental stress levels might affect children's oral health [14]. The level of stress on parents may affect the oral health condition of children through various channels. For example, this may affect the pattern of parenting which, in turn, will change the child's behavior [15].

The purpose of the study was to determine the parents' perception of their children's dental and oral health status based on their children's socioeconomic status and to determine the parents' perceptions of their children's dental and oral health status based on the parents' stress level.

Material and Methods

Study Design

This type of research is analytic observational with a cross-sectional design. This research was conducted in July 2020 in North Rantepao Toraja City, South Sulawesi Province, Indonesia.

Sample and Data Collection

The subjects of this research are parents with children who meet the criteria, namely, those Willing to participate in the study, and respondents are parents who have children aged 6-17 years. The research instrument used was a questionnaire. The criteria for assessing children's oral health were evaluated in this study based on the parent's perception of seeing directly and assessing how good their child's dental and oral health was. The child's parental reported oral health was measured on a five-response scale, i.e., 0 (very poor) to 4 (very good) for the question 'In general, how would you describe the condition of your child's teeth?'. Then the total score is divided into two categories: bad (very bad, bad, and moderate) and good (good and very good).

Socioeconomic status indicators are seen from the number of children, insurance, income, education, and visits to the dentist. Family income is based on the Regional Minimum Wage (RMW) of the area with one question 'how much is the family income in one month?'. Parental education was assessed as the highest level of education achieved by anyone in the family with one question 'highest level of education achieved in the family?', 'less than high school, high school, and more than high school'. Controlling factors that can affect children's oral health: number of children 6-17 years old in the family (one child compared to two or more children covered by child health insurance (without coverage and insurance). And preventive dental visits in the past year were assessed with one question 'During the past 12 months, how many times did your child visit the dentist for preventive dental care such as a dental check-up and cleaning? No preventive dental visits and one or more preventive dental visits.

Parental stress levels were assessed based on three of the four Aggregation items on the Parenting Scale. This scale is derived from the parental stress index and the childbirth scale. Using the following three things: How often in the past month did the parents feel; (a) that their child is much more difficult to care for than children of the same age, (b) is much distracted by the things their child does, and (c) is angry with their child. Each item is rated on a scale from 1 (never), 2 (never), 3 (sometimes), 4 (often), to 5 (always). Then the total score was divided into three categories, namely low (score 3-6), moderate (score 7-10), and high (score 11-15).

Data Analysis

Data processing was performed using SPSS Version 22 for windows (IBM Corp., Armonk, NY, USA). This analysis proceeds in several steps. First, descriptive statistics were calculated for all variables. Second, perform a comparative test analysis using the Chi-Square test, with the significance level set at 5%.

Ethical Clearance

This study was approved by the Ethics Committee of the Faculty of Dentistry, Hasanuddin University, based on Attachment Number: 0140/PL.09/KEPK FKG-RSGM UNHAS/2021.

Results

Table 1 is a univariate analysis based on the characteristics of respondents, totaling 364 people. Most of the respondents in this study have two or more children, have private insurance, and have a higher education background. For income and the number of visits to the dentist, the distribution of respondents is almost evenly distributed between those with incomes less than the minimum wage and more than the minimum wage.

Table 1. Descriptive analysis of socioeconomic variables.

Variables	N	%
Number of children		
One Child	135	37.1
Two or more children	229	62.9
Insurance		
No guarantee	144	39.6
Private insurance	220	60.4
Income		
Less RMW	186	51.1
More than RMW	178	48.9
Education		
Less than High School	22	6
High School	72	19.8
More than High School	270	74.2
Visit the Dentist		
Never	185	50.8
One time or more	179	49.2

Socioeconomic factors can contribute to causing differences in parental perceptions of the oral health status of children (Table 2). Children of parents with more than one child with private insurance, an income of more than RMW, and higher education are more likely to be judged to have good oral health by their parents.

It was found that the variables of insurance, income, education and the number of visits to the dentist all showed significant values. There are significant differences in parents' perceptions of the oral health status of their children between parents with and without insurance coverage. Similar results were also observed between parents with income group less and more than RMW and those with less and more education from high school and never or once or more visited the dentist. However, there was no significant difference in parents' perceptions of the oral health status of children between parents with one or more children.

Table 2. Comparative test of oral health by socioeconomic characteristics.

Variables	Poor N (%)	Good N (%)	Total N (%)	p-value
Number of children				
One Child	44 (12.09)	91 (25.00)	135 (37.09)	0.472
Two or more children	85 (23.36)	144 (39.56)	229 (62.91)	
Insurance				
No guarantee	58 (15.93)	86 (23.63)	144 (39.56)	0.037*
Private insurance	71 (19.51)	149 (40.93)	220 (60.44)	
Income				
Less RMW	84 (23.08)	102 (28.02)	186 (51.10)	0.000*
More than RMW	45 (12.26)	133 (36.54)	178 (48.90)	
Education				
Less than High School	13 (3.57)	9 (2.47)	22 (6.04)	
High School	30 (8.24)	42 (11.54)	72 (19.78)	0.001*
More than High School	86 (23.63)	184 (50.55)	270 (74.18)	
Visit the Dentist				
Never	87 (23.90)	98 (26.92)	185 (50.82)	0.000*
One time or more	42 (11.54)	137 (37.64)	179 (49.18)	

*Chi-Square test; p<0.05.

Table 3 shows the results of a comparative oral health test based on stress levels. Oral health variables were categorized into bad and good. Meanwhile, the stress level variable is categorized into low, medium, and high. Most parents have moderate stress levels. It was observed that parents with low-stress levels had more children rated as having good oral health and moderate stress levels. However, parents with high-stress levels found that more children were judged to have poor oral health. From the results of the statistical significance test, it was found that there was a significant difference in oral health according to stress levels.

Table 3. Comparative test of oral health based on stress level.

Parents' Perception of Status	Children's Oral Health			p-value
	Poor N (%)	Good N (%)	Total N (%)	
Low	29 (7.97)	94 (25.82)	123 (33.79)	
Medium	75 (20.60)	135 (37.09)	210 (57.69)	0.000*
High	25 (6.87)	6 (1.65)	31 (8.52)	

*Chi-Square test; p<0.05.

Discussion

This study is research conducted to obtain parental perceptions of the dental and oral health status of children aged 6-17 years based on socioeconomic status and parental stress levels. The first variable in socioeconomic status is the number of children in the family. The results of the comparison test showed that there was no significant difference in oral health based on the number of children. Previous studies have found that the number of siblings is negatively related to a child's health [16,17] and spending on health [18].

High stress levels can make parents pay attention or not pay attention to the needs of their children, which may be reflected differently in seeking the use of their child's dental care [12]. In addition, several studies found that in mothers, the number of children was more associated with social isolation and relationship problems with partners [19]. These things may cause the same results are not reflected in this study.

Insurance can have a mediating effect on other sociodemographic variables and access to care. However, the presence of insurance alone does not guarantee it because the insurance you have may not be accepted at health facilities that are easily accessible [20,21]. A report published in Care Without Coverage concluded that health insurance is associated with better physical and mental health outcomes for working-age Americans and that adults who do not have health insurance suffer from decreased health and life expectancy [22,23].

The findings of Schwendicke et al. [24] and Chen et al. [25] that children with lower levels of parental education will have poorer health literacy, poorer dietary behavior and oral health, this study found that parents with lower academic backgrounds had poorer oral health knowledge, which in turn ultimately lead to poorer dental and oral health behaviors. A study on dental caries shows that the mother's education level is the most important index that influences dental caries from household income and parents' occupation [26].

A large number of dentist visits, especially preventive visits, reduces the need for preventive care later because preventable conditions have been prevented earlier during preventive visits, thereby improving oral health [27]. It was also found that children who frequently visited the dentist had a high caries rate. However, because of the awareness to carry out this treatment, the health of the oral cavity will improve again because all problems in the oral cavity have been overcome [28].

Table 3 shows significant differences in oral health based on parental stress levels. Ultimately, family stress levels can influence a child's behavior through changes in the child's stress response, which can compromise oral health. In addition, it is possible that parents with high-stress levels will be too distracted or

busy thinking about other factors that make them stressed rather than taking preventive measures to maintain their child's dental health, such as regular dental visits [12].

Conclusion

There is a significant comparison of parents' perceptions of their children's dental and oral health based on the socioeconomic status of parents in the group of parents who have insurance and have a high income, high parental education, and the number of visits to the dentist. In addition, there are significant differences in children's oral health based on the stress level of parents.

Authors' Contributions

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All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.

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None.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

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