

Correlation Between Parents Level of Education and Dental and Oral Hygiene in Children with Autism at Mutiara Hati Special School

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ABSTRACT

Background: Children with autism have difficulty controlling the movement of tongue that food often cannot perfectly swallowed. Parents play a very important role in maintaining dental and oral hygiene for children with autism. The behavior of children with autism is strongly influenced by the parent's level of education. **Objective:** to determine the correlation between parent's level of education and the level of oral hygiene in children with autism (measured by OHI-S). **Methods:** This type of research is analytic observational, with a cross sectional approach. Simple random sampling technique was performed. The total sample was 23 students of Mutiara Hati Surabaya Autism Special School. OH Index form by WHO was used to collect the data of dental hygiene and a questionnaire form by RISKESDAS was used to collect data of parent's level of education. **Results:** There is a significant correlation between the parent's level of education and OHI-S in children with autism (<0.05), $R = -0.49$ means the correlation is sufficient. The lower the level of dental and oral hygiene the higher the level of education of their parents. **Conclusion:** There is a correlation between the parent's level of education and dental and oral hygiene in children with autism at Mutiara Hati Special School.

Keywords: Autism, parental education level, OHI-S, oral hygiene.

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INTRODUCTION

Autism is a very severe and complex neurobiological developmental disorder, including disturbances in aspects of social interaction, communication, language, behavior, emotional disturbances and sensory perception and even motor aspects. They are unable to form social correlations because of difficulties in communicating normally, even avoiding or not responding to social contacts.^{1,2}

The prevalence of autism in the world currently reaches 15-20 cases per 10,000 children or 0.15-0.20%, if the birth rate in Indonesia is six million per year, the number of people with autism in Indonesia will increase by 0.15% or 6,900 children per year. The prevalence of boys with autism in the world is three to four times greater than girls. In Indonesia itself, boys with autism are five times greater than girls.^{2,3}

The cause of autism itself is still unknown until this day. Based on research, intermediate compounds as metabolites, which are generally in the form of organic acids, if present in excessive amounts can interfere with brain function, and are thought to be the cause of autism symptoms. This situation is often preceded by digestive disorders which are considered the main cause of metabolic irregularities.³

Children with autism symptoms have various limitations such as not being able to clean their own oral cavity, thereby increasing the risk factor for damage to the teeth and surrounding soft tissues^{4,5}. Dental and oral health in children is an important factor that must be considered as early as possible, because tooth decay can occur at the age of children and can affect the growth of teeth at a later age.

Mutiara Hati itself is a school that accommodate children with special needs. Based on a preliminary study conducted by researchers in September 2018, there has been no research on the status of oral hygiene in children with autism at Mutiara Hati Special School in Sidoarjo. For this reason, researchers want to conduct further research to determine

the correlation between the level of parental education and the oral hygiene of their children.

In children, the influence of parents is very strong. Parents, especially mothers, have a very important role in the attitudes and behavior of children in the maintenance of their teeth. Parents act as the closest people to children who always educate, train and give love to children. Knowledge, attitudes, and behavior of all these components affect the dental and oral health status in children.^{5,6}

Parents and teachers must be equipped with training in educating and teaching children to be concerned about dental and oral health and general body health.⁵ Dental and oral health needs to be improved throughout the family and community in order to support dental and oral health status.^{7,8} Individuals with special needs have lower levels of dental and oral health and hygiene compared to normal individuals.^{9,10} In children with autism, poor muscle tone, poor coordination, continuous drooling, hyperactive knee movements, often accompanied by strabismus, and 30% have epilepsy.^{11,12}

Children with autism have coordination of irregular tongue movements, food is often held and not swallowed immediately. This habit is coupled with the consumption of sweet foods, and if not cleaned optimally can cause an increase in tooth decay into cavities and dental caries in autistic children.^{13,14} In order to change the behavior of individuals or communities, it is necessary to understand the factors that influence changes the behavior. Factors that influence dental disease are knowledge factors, education factors, nutritional factors, lifestyle, socio-economic, age factors, environmental factors, cultural factors, dental and oral health service system factors, habit factors, and improper tooth brushing factors.^{15,16} Higher education has a positive effect on health and promotes healthy behavior.¹⁷

In general, to measure dental and oral hygiene an index is used. The index is a number that indicates the clinical condition obtained at the time of the examination, by measuring the area of the tooth surface covered by debris or

calculus called OHI-S (Oral Hygiene Index Simplified) from Green and Vermillion 1964.¹⁴ Status of oral hygiene (OHI-S) is the sum of debris index (DI) and calculus index (CI) by looking at the scores on 6 permanent teeth as index teeth. The OHI-S index is useful for seeing whether oral hygiene is in the good, moderate, or poor category.¹⁵

Therefore, the purpose of this study was to determine the level of parental education on the level of dental and oral hygiene of children with autism at Mutiara Hati Special School.

MATERIALS AND METHODS

This research is classified as an observational analytic research with a cross sectional research design which used probability sampling data collection by simple random sampling. Simple Random Sampling is a sampling method in which each member of the population is given the same opportunity to be selected as a sample²², where the sample used is 23 children in the range of 6-17 years old. The subjects give their consent before collecting data. In this study the parents treated to fill out a questionnaire and children with autism who were examined for OHI-S. The variables in this study used independent and dependent variables. The independent variable is the level of education, while the dependent variable is the level of dental and oral hygiene. The place where this research was conducted is SLB Mutiara Hati Sidoarjo. The implementation time of this research is from April to August 2019.

Researchers used a questionnaire in collecting data. The questionnaire contains the name, age, gender, parental education and questions related to dental and oral health as many as 14 questions. In a validity test the sample were showing a valid result, also in a reliability test showed a normal result for all the subjects. Subjects were given time to fill out the questionnaire. Each correct answer was given a score of 3, less precise was given a score of 2, and incorrect answers were given a score of 1.

OHI-S (simplified oral hygiene index) is an index to measure the area of the tooth surface covered by debris and calculus. This index is easy to use because of the objective criteria, the examination can be done quickly, it can assess the degree of oral hygiene individually to the smallest extent.¹⁴

To determine the debris assessment criteria or OHI-S assessment, the debris score and calculus score tables are used.¹⁵

The examination was done by the researcher and carried out using a mouth mirror and an excavator, by scraping the excavator on the tooth surface. In the Oral Hygiene Index, scoring for each tooth is done as follows :

- 0 : On the visible tooth surface, there is no debris/calculus
- 1 : On visible tooth surface, on soft debris/calculus covering 1/3 of the tooth surface or less than 1/3 of the surface.
- 2 : On the tooth surface visible soft debris/calculus covering the surface of more than 1/3 of the tooth surface, but less than 2/3 of the tooth surface.
- 3 : On the visible surface of the tooth there is debris/calculus covering the surface of more than 2/3 of the surface or the entire tooth surface.

OHI-S can be measured by the formula:

$$\text{OHI-S} = \text{Debris Index (DI)} + \text{Calculus Index (KI)}$$

OHI-S Assessment Criteria :

- Good : If the value is between 0.0-1.2
 - Moderate : If the value is between 1.3-3.0
 - Poor : If the value is between 3.1-6.0
- (Green and Vermillion scores, 1964)

After getting the required data, the next step is data analysis. This research is an observational analytic study with a cross sectional approach because the research is conducted by observing data once at a time, which is carried out on the dependent variable and the independent variable. The data scale used for OHI-S children with autism and the level of education of parents is ordinal. Analysis of

differences in education level of OHI-S children with autism using Friedman test.^{16,17}

Knowledge measurement can be done by interviews or questionnaires that ask the content of the material to be measured from the research subject or respondent. Meanwhile, according to Ramadhan dkk (2016), the quality of knowledge can be done by scoring:

The level of knowledge is good if graduated from high school or above.

The level of knowledge is quite good if graduated from junior high school or in high school.

The level of knowledge is not good if graduated from elementary school or not going to school.

RESULTS

Characteristics of Research Respondents.

Based on research conducted in April-August 2019 on research subjects a total of 23 respondents obtained characteristic data, including: the age of the respondent, the last education of the respondent's parents, which can be seen in the following statements:

Respondent Age

This study was guided by the results of the examination and school data of the Mutiara Hati SLB students as many as 23 respondents with an age range of 6 - 17. Most of the respondent is 6 years old (26%) and 9 years old (22%). Characteristics of Respondents by Age.

Respondent's Parents Education

Characteristics of Respondents Based on Parents' Last Education. When both or one of the parent's last education is in a bachelor degree, they're categorized as "High Education" level. When one of the parent's highest education was in middle to high school, they are categorized as "Intermediate Education" level. Then, when one of the parent's highest education was in elementary school, they're categorized as "Low Education" level (UU SISDIKNAS No. 20 Th. 2003).

The highest education level of parents was in intermediate education (15 parents), then high education (6 parents), and low education (2 parents).

Data Debris Index (DI) and Calculus Index (CI)

Table 1. Debris Index (DI) and Calculus Index (CI)

	N	Mean	Std. Deviation
DI	23	0.9826	0.47449
CI	23	0.4391	0.21477
OHI	23	1.3826	0.53907
Valid N (listwise)	23		

Based on Table, it is known that the respondent's debris index (0.9826) is higher than the respondent's calculus index (0.4391). The average oral hygiene index score of the respondents is 1.3826 which means the oral hygiene status is moderate.

Cross Tabulation Analysis Results

Parents' Education Level and Debris Index (DI)

Table 2. Cross tabulation analysis between parents' education level and Debris Index (DI)

Correlations			DI	Education Level
Spearman's rho	DI	Correlation Coefficient		-0.575**
	Education Level	Correlation Coefficient	-0.575**	
	Sig. (2-tailed) = 0.004			

** . Correlation is significant at the 0.01 level (2-tailed).

Based on Table, it is known that the value of sig = 0.004 < 0.05 means that there is a significant correlation between the level of Parental Education and the Debris Index (DI). The correlation value -0.575 means that there is a strong and negative correlation. A negative correlation means that the lower the DI, the higher the level of education.

Education Level and Calculus Index (CI)

Table 3. Cross tabulation analysis between parents' education level and Calculus Index (CI)

Based on Table, it is known that the value of $\text{sig} = 0.044 < 0.05$ means that there is a significant correlation between the level of parental education and the Calculus Index (CI). The correlation value -0.431 means that the correlation between the level of parental education and the Calculus Index (CI) is sufficient and negative. A negative correlation means that the lower the CI, the higher the level of education.

Education Level and OHI-S

Table 4. Cross-tabulation analysis between parents' education level and OHI-S

Correlations			Education Level	OHI
Spearman's rho	Education Level	Correlation Coefficient		-0.490*
	OHI	Correlation Coefficient	-0.490*	
	Sig. (2-tailed) = 0.018			
*. Correlation is significant at the 0.05 level (2-tailed).				

Based on Table, it is known that the value of $\text{sig} = 0.018 < 0.05$ means that there is a significant correlation between the level of Parental Education and OHI-S. The correlation value -0.490 means that the correlation between the level of Parental Education and OHI-S is sufficient and negative. A negative correlation means that the lower the OHI, the higher the level of education.

DISCUSSION

Correlations			Education Level	CI
Spearman's rho	Education Level	Correlation Coefficient		-0.431*
	CI	Correlation Coefficient	-0.431*	
	Sig. (2-tailed) = 0.044			
*. Correlation is significant at the 0.05 level (2-tailed).				

This study aims to determine the level of parental education on the level of dental and oral hygiene of children with autism at Mutiara Hati Special School. This study was aimed at parents of children with autism because the level of parental education has a significant influence on the level of dental and oral hygiene, especially in children with autism who cannot maintain their own oral hygiene. 18 Respondents in this study were students with autism in Mutiara Hati SLB Surabaya with a total sample of 23 students. The sample was selected by simple random sampling. Based on the results of this study indicate that the age of the respondents ranged from 6-17 years, while the age of the most respondents was 6 years with 6 children (26%).

Educational data for parents of autistic students were obtained from questions through a questionnaire, while autistic students were examined for oral hygiene based on OHI-S status. Based on the results of the study, it is known that the parents of the research respondents with the highest education level are secondary education with 15 children (65%), then 6 children with high education (26%), and 2 children with low education (9%). OHI-S status in autistic children is divided into three categories, namely good, moderate and bad categories. Based on the results of the study, it is known that most of the respondents' dental and oral hygiene levels have moderate criteria with a total of 13 children (57%), while good criteria are 9 children (39%), and the least is bad criteria with 1 child (4%).

The results showed that there was a significant correlation between the level of parental education and the Debris Index (DI), the lower the DI the higher the education level. There is a significant correlation between parents' education level and Calculus Index (KI). the lower the KI the higher the level of education. In addition, there is a significant correlation between the level of Parental Education and OHI-S, the lower the OHI the higher the education level. The alignment between the majority of respondents and their parents with secondary education and with moderate OHI-S

criteria is in accordance with the results of Christiano and Rama (2015)¹⁹ which states that the higher the level of education, the easier it is to absorb new information and innovations, including dental health. Research conducted by Afiati (2017) also proves that when a person is at a higher level of knowledge, the attention to dental health will be higher, and vice versa, when someone has less knowledge, attention and dental care are also low.²⁰ Opinions The same thing was also conveyed by Nuntung, et al (2015), which stated that the higher a person's level of formal education, the better knowledge and attitudes of healthy living behavior, the easier it is to get a job so that more income is obtained to meet health needs. On the other hand, a lack of education will hinder the development of one's attitude towards newly recognized values.²¹

The educational level of parents can influence child and family health related behaviours. Studies have shown that the education level of mothers is likely to have a greater impact than that of fathers. An association has been found between higher parental education level and increased likelihood of consuming a healthy diet^{22,23}. The results of this study are in line with the research of Rianto (2015) which states that parental knowledge is very important in underlying the formation of behaviors that support or do not support children's dental and oral hygiene. This knowledge can be obtained naturally or in a planned manner, namely through the educational process. This study also agrees with research in Purnomo (2015), Afiati dkk (2017) dan Ngantung (2015) where there is a correlation between parental characteristics (education level, income level and knowledge) with dental caries experience in children.^{15,19,20}

CONCLUSION

There is a significant correlation between the level of parental education and the level of dental and oral hygiene of autistic children at Mutiara Hati Special School, the lower the level

of dental and oral hygiene of autistic children, the higher the level of parental education.

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