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Relationship between nutritional status and occurrence of dental caries in mentally retarded children at Karya Bhakti Special School In 2022

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ABSTRACT

Background: Dental caries is a disease of dental tissue which is characterized by damage to the surface tissue of the teeth. Children with mental retardation have a higher caries rate and poor oral hygiene than normal children in general. Dental and oral health is part of the body's health that influences each other, namely the nutritional status which can be measured through anthropometric assessment. Nutritional status is an important element in shaping health.

Objective: the purpose of this study was to determine the relationship between nutritional status and the occurrence of dental caries in mentally retarded children at SLB Karya Bhakti.

Method: this research is a cross sectional study which was conducted in July 2022 at the Karya Bhakti Special School on Jalan Sidoyoso Wetan Lebar No.14, RT 005/RW12 Simokerto, Simokerto District, Surabaya City, East Java 60143. The research subjects were 28 mentally retarded children who met Inclusion and exclusion criteria were taken using simple random sampling technique. The data collection instrument in this study used an observation sheet to measure the nutritional status of mentally retarded children and an examination sheet to measure dental caries in mentally retarded children. The Wilcoxon test was used to analyze the relationship between nutritional status and the occurrence of dental caries in mentally retarded children at SLB Karya Bhakti with a significance level (α) = 0.05.

Result: The nutritional status of mentally retarded children at Karya Bhakti Special School is in the normal category and mentally retarded children at Karya Bhakti Special School have dental caries. Based on the results of statistical tests, it is known that there is a relationship between nutritional status and the occurrence of dental caries in mentally retarded children at SLB Karya Bhakti ($p < 0.05$).

Conclusion: there is a relationship between nutritional status and the occurrence of dental caries in mentally retarded children at SLB Karya Bhakti.

Keywords: Nutritional Status, Dental Caries, Mentally Disabled

BACKGROUND

Dental caries is one of the problems in oral health that can affect public health. The incidence of dental caries is experienced by both children and adults. The high incidence of dental caries requires optimal treatment, especially in the prevention of dental caries in children (WHO, 2019 *cit.* (Hidayati *et al.,* 2021).

According to the 2018 Basic Health Research Results (RISKESDAS), in Indonesia, dental and oral health is still a problem, with a national prevalence of dental and oral

problems of 57.6%. And the largest proportion of dental problems in Indonesia is cavities as much as 45.3% (Hidayati *et al.,* 2021).

According to WHO, children with mental retardation in Indonesia are around 5-9%, which is about 7-11 million of the entire population of Indonesia, but the exact data is not yet available. Children with mental retardation are divided into 3 groups, namely mild, moderate and severe mental retardation (Dewi *et al.,* 2022).

The process of the occurrence of caries continues to the deeper part of the tooth so that it forms a hole. In this process demineralization occurs which is caused by the interaction of germs, carbohydrates that are suitable on the surface of the teeth and mouth (Margareta, 2012).

Many factors can cause dental caries in children, including factors in the mouth that are directly related to the process of dental caries, including tooth structure, tooth morphology, arrangement of teeth in the jaw, acidity of saliva, oral hygiene related to the frequency and habits of brushing. tooth. (Rehena et al., 2020 *cit.* (Dewi *et al.,* 2022).

Children with mental retardation have a higher caries rate and worse oral hygiene than normal children in general (Sabilillah, M.F., *et al.* 2016 *cit.* (Amiqoh *et al.,* 2022).

Dental and oral health is part of the health of the body that affect each other. The degree of health can be assessed by several indicators, one of which is nutritional status which can be measured through anthropometric assessment. Variable height for age (TB/U) and body mass index for age (BMI/U) can be used to determine the prevalence of nutritional status of school children and adolescents (Aulia *et al.*, 2019).

Nutritional status is one of the important elements in shaping health status. Nutritional status is a condition caused by a balance between the intake of nutrients from food and the nutritional needs of the body. Nutritional status is strongly influenced by nutritional intake. Utilization of nutrients in the body is influenced by two factors, namely primary and secondary. The primary factor is a condition that affects nutritional intake due to the improper composition of the food consumed, while the secondary factor is that the nutrients are not sufficient for the body's needs due to disturbances in the utilization of nutrients in the body (Par'i *et al.,* 2017).

Based on the 2013 Riskesdas data, undernutrition in Indonesia has a prevalence of 13.9% while the 2018 Riskesdas data has a prevalence of 13.8%, which means that only 0.1% has decreased the prevalence of undernutrition in the last 5 years. So that this problem becomes a problem that must be considered by health workers and the local government (Kemenkes, 2018 *cit.* (Aulia *et al.,* 2019).

Good and proper nutrition is important to support dental health. On the other hand, dental health is also important for adequate nutritional intake. Glucose is a major part of the diet of the population in Indonesia. Apart from being a staple food, sugar is also consumed as a snack or snack as found in candies, wafers, cakes, biscuits, and in soft drinks. The most widely used type of sugar is sucrose (Agung & Nurlitasari, 2017).

Consumption of large amounts of sucrose can reduce the buffering capacity of saliva so that it can increase the occurrence of caries. The habit of consuming foods/drinks with high sugar content, fast food, and snacks between meals increases the risk of caries in children (Agung & Nurlitasari, 2017).

Based on preliminary data from the results of a dental examination conducted on March 9, 2022 on mentally retarded children at the Karya Bhakti Special School with a total of 13 children, it was found that 10 mentally retarded children had dental caries (77%), and 3 mentally retarded children were caries-free (23%). This is still not in line with expectations, respondents should have a high percentage of being free from caries

risk. Thus, the problem in this study is the severe dental caries condition in mentally retarded children at SLB Karya Bhakti in terms of nutritional status.

RESEARCH METHODS

This research is a cross-sectional study that was conducted in July 2022 at the Karya Bhakti Special School on Jalan Sidoyoso Wetan Lebar No. 14 14, RT 005/RW 12 Simokerto, Simokerto District, Surabaya City, East Java 60143. meet the inclusion and exclusion criteria taken by simple random sampling technique. The data collection instrument in this study used an observation sheet to measure the nutritional status of mentally retarded children and an examination sheet to measure dental caries in mentally retarded children. The Wilcoxon test was used to analyze the relationship between nutritional status and the occurrence of dental caries in mentally retarded children at SLB Karya Bhakti with a significance level (α) = 0.05.

Ethical approval for this study was obtained from Health Polytechnic of Surabaya Ethics Committee, with approval number: No.EA/1226/KEPK-Poltekkes_Sby/V/2022.

RESULTS AND DISCUSSION

Table 1 Nutritional Status of Mentally Impaired Children at Karya Bhakti Special School

Research Subjects	Nutritional Status Diagnosis										Total
	Very Thin		Thin		Normal		Fat		Obesity		
	n	%	n	%	n	%	n	%	n	%	
n=28	3	10,7	4	14,3	9	32,1	5	17,9	7	25,0	100%

In this study, according to table 1, it is known that the mentally retarded children in SLB Karya Bhakti are mostly nutritional status with the normal category as many as 9 people with a percentage of 32.1%. This is in accordance with the results of research conducted by Hafiza et al, (2018) based on the results of this study that most of the samples had normal nutritional status, namely 51 (82.3%). The results of this study were seen that there were still many respondents who had normal nutritional status, this may be nutritional needs in accordance with expenditures and nutritional needs that enter the body.

Table 2 Dental caries in mentally retarded children at Karya Bhakti Special School

No.	Dental Caries	Frequency	Persentase (%)	Assessment Criteria
1.	Caries Free	9	32,1%	0 = No Caries 1 = There Is Caries
2.	Caries	19	67,9%	
	Total	**28**	**100%**	

In this study, according to table 2, it is known that most of the mentally retarded children in SLB Karya Bhakti have dental caries, as many as 19 people with a percentage of 67.9%. According to (Achmad et al., 2016) dental and oral health problems that are most often found in people with mental retardation are higher dental caries, especially in severe and very severe mental retardation. Caries disease and high rates of mental retardation in patients with mental retardation may be caused by the inability of the patient to clean the oral cavity and parents pay less attention to the child's diet.

Table 3 Analysis of the Relationship between Nutritional Status and the Occurrence of Dental Caries in Children with Mental Requirements at SLB Karya Bhakti

Nutritional Status	Dental Caries		Total	P *Value*
	Xerostomia Diagnosis	Low		
Very Thin	**0**	3	3	0,000
Thin	**2**	2	4	
Normal	**4**	5	9	
Fat	**2**	3	5	
Obesity	**1**	6	7	
Total	**9**	19	28	

Based on table 3 the results of statistical tests using the Wilcoxon test data analysis technique found that there was a relationship between nutritional status and the occurrence of dental caries in mentally retarded children at Karya Bhakti Special School (P<0.05). From the Wilcoxon test, it shows the P Value of 0.000 which means it is smaller than the significant value (α) that is set, namely 0.05 (P <0.05) so that H0 is rejected and H1 is accepted, it can be said that statistically there is a relationship between nutritional status and the occurrence of dental caries in mentally retarded children at SLB Karya Bhakti. This study is in line with research conducted by Mirawati et al (2019) that there is a significant relationship between dental caries and nutritional status.

Dental caries in children showed a significant relationship with nutritional status. The lower the dental caries index in children, the better their nutritional status. A person with a good nutritional intake is consuming carbohydrates, protein, fat, vitamins, magnesium, air and minerals. In sufficient quantities, these nutrients have a function in the growth and development of teeth, namely forming a protective layer on the tooth surface and preventing tooth decay. Dental caries causes disruption of masticatory function which can affect food intake and nutritional status (Mirawati & Yauri, 2019).

Nutritional status is the state of the body as a result of food consumption and use of nutrients. Distinguished between poor, less, good and more nutritional status (Ariani, 2017).

Nutrition plays a role in every stage of tooth growth and in maintaining the balance of the oral environment which is associated with dental health. Nutrition for optimal tooth growth is the same as the nutrients needed by the body because the period of tooth growth is in line with the growth period of the body as a whole. The nutrients needed for tooth growth are Protein, Minerals (flour, calcium, phosphorus and magnesium), Vitamins (Vitamins A, C and D) and water. (Nurdin, 2011 cit (Mirawati & Yauri, 2019).

Caries occurs not due to one event like other infectious diseases but due to a series of processes that occur over several periods of time, in general there are four main factors that play a role, namely: host or host factors, agents or microorganisms, substrates or diet and factors. These four factors are interrelated with each other because they are related to human behavior itself (Margareta, 2012).

CONCLUSION AND RECOMMENDATION

There is a relationship between nutritional status and the occurrence of dental caries in mentally retarded children at SLB Karya Bhakti. For SLB Karya Bhakti teachers to pay attention to the food intake consumed by students who have thin, fat and obese nutritional status in order to be able to improve nutritional status to normal and increase dental health maintenance. For health workers, it is hoped that they can improve dental and oral health services and provide socialization about nutritional status and caries.

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